

(No Model.)

E. S. CROSS.
KNOCKDOWN SLATE RULING APPARATUS.

No. 471,957.

Patented Mar. 29, 1892.

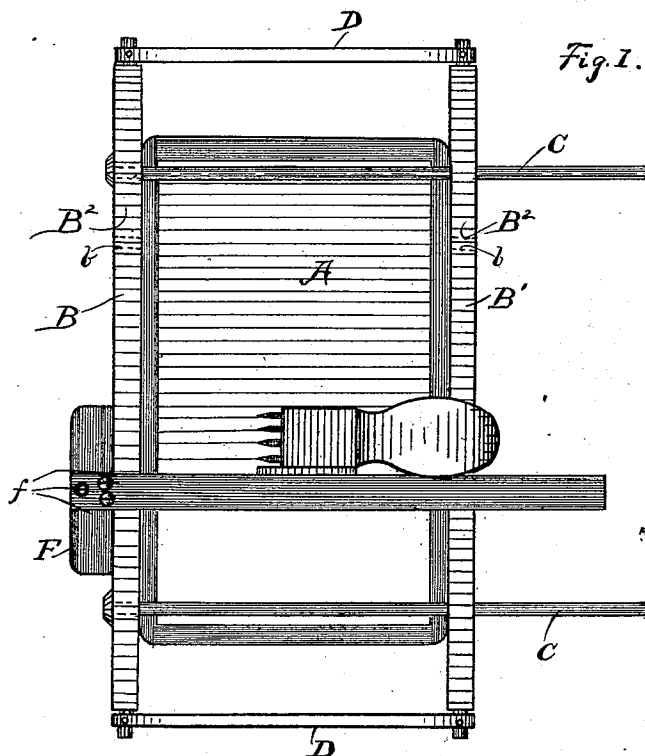


Fig. 1.

Fig. 2.



Fig. 8.

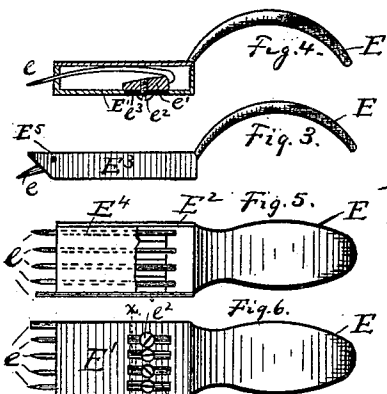
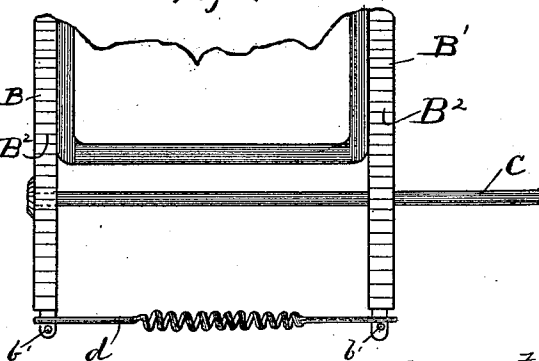


Fig. 7.



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KNOCKDOWN SLATE-RULING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 471,957, dated March 29, 1892.

Application filed December 11, 1890. Serial No. 374,278. (No model.)

To all whom it may concern:

Be it known that I, EDWARD S. CROSS, of Elyria, in the county of Lorain and State of Ohio, have invented certain new and useful
5 Improvements in Knockdown Slate-Ruling Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make
10 and use the same.

My invention relates to improvements in knockdown slate-ruling apparatus; and it consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan showing the members assembled in working position. Fig. 2 is a plan showing a box in which the device in its knocked-down
20 condition is packed ready for shipment. Figs. 3 and 4 are respectively side elevation and longitudinal section of the scoring device. Figs. 5 and 6 are respectively top and bottom plan of the scoring device, a portion of the
25 cover being broken away in Fig. 5. Fig. 7 is a cross-section on line *x x*, Fig. 6. Fig. 8 is a plan in detail showing a modification in the spring.

A represents a plate (shown in Fig. 1) partly
30 ruled. The ruling should be accurate, otherwise it would mislead rather than guide a child in correctly forming letters, characters, &c.; but the sides of a slate-frame are not likely to be straight enough to serve as guides
35 in accurate ruling.

Heretofore rigid frames of various kinds have been provided for ruling slates; but from the fact that such a frame must be large enough to receive the largest-sized slates in
40 use such frames are necessarily heavy and cumbersome for shipping and handling. My apparatus contemplates a knockdown-frame, so that the parts may be packed in small compass for shipment or handling, and so that
45 they can even be carried in the pocket. My improved apparatus is provided with two straight bars *B B'*, usually of wood, and these are pierced laterally for receiving with a comparatively easy fit the cross-rods *C C*—that is
50 to say, the rods should fit as snugly as will admit of readily adjusting bars *B B'* endwise

the rods—so that when the parts are assembled and in position they will constitute a frame-work sufficiently rigid for the purpose. Bars *B B'* are connected at the ex-
55 tremes thereof, by, for instance, rubber bands *D D*, as shown in Fig. 1. Bars *B B'* are supposed to be long enough to accommodate the largest-sized slate, and rods *C C* are supposed to be near enough to each other to
60 rest on, if need be, the frame of the shortest slate, and for this purpose there had better be some extra holes, as at *b b*, (shown in dotted lines, Fig. 1,) to accommodate these
65 rods at different distances apart. If the ruling is to be done on a table, the distance apart of rods *C C* is not material, as the slate and frame-work of the apparatus can all rest on the table; but if the ruling is to be
70 done where there is no table at hand—for instance, in the lap—in such case rods *C C* should rest on top of the slate-frame. In such cases in placing the device on the slate-frame one of the rods *C* should be directly
75 above one of the end pieces of the slate-frame and the ruling should be commenced at this end, and if before the ruling is completed the other rod *C* is in the way the slate can be
80 slid endwise until this second rod *C* is over the other end of the slate-frame, thus exposing the balance of the slate for ruling purposes. The frame-work, consisting of bars *B B'* and rods *C C*, having been assembled with the springs or rubber bands on the ends, as
85 already mentioned, bars *B B'* are drawn apart, so as to embrace the sides of the slate-frame, and the tension of bands *D D*, or whatever may take the place of these bands, will hold
90 bars *B B'* in place, bearing against the edges of the slate-frame. I will here call attention to Fig. 8, in which a metal spring *d* takes the place of a rubber band *D*, the extremes of the wire of which the spring is composed having
95 hooked or bent ends for attaching to the reduced end sections of bars *B B'*, and removable pins *b' b'* are shown for holding the springs from slipping off the bars.

A T-square *F* is employed for guiding the scoring-tool, this T-square being of ordinary construction, except for knockdown pur-
100 poses. The tongue thereof is secured in the gain of the head by wood-screws *f f*, so that

by removing these screws the tongue and head may be readily separated for packing. Bars B B' are provided with scales B² for convenience in ruling, and a ruling or scoring device is provided the construction of which may be as follows, as shown in Figs. 3, 4, 5, 6, and 7:

The handle E, the bottom E', the slotted end piece E², and the side pieces E³ are constructed preferably of a single piece of thin sheet metal struck up into the desired form approximately, as shown, and a cover E⁴ is provided the edges of which are flanged downward to fit between members E³, the cover being secured by a single pin E⁵, extending through the flanges of the cover and through side pieces E³, near the top edge of the latter.

e e are the scoring-tools, constructed usually of spring-wire, each tool being soldered or otherwise secured to a block *e'*, the different blocks being secured to the bottom member E' by means of screws *e*², the shanks of these screws extending through slots *e*³ in member E'. (See Figs. 4 and 6.) By loosening these screws the different blocks *e'* may be adjusted endwise the device, as required, to advance or retire the different tools *e*, for instance, in evening the scoring ends thereof and to cause the scoring-tools to protrude the necessary distance beyond the casing, &c. The parts having been assembled, as shown more clearly in Fig. 1, the T-square is moved along bar B', as required, to serve as a guide for the scoring device. If it is so desired, one or more of the scoring-tools may be removed, so as to leave broader spaces between the scored lines, and this can readily be done by removing the screw; or, better still, by loosening the necessary screws any one of the tools *e* may be moved back into the head so far as not to engage the slate.

The device in its knocked-down condition can be done up in a small package, which renders it convenient for shipment or for carry-

ing about from place to place by the operator. In Fig. 2 the device is shown packed in a small paper box.

What I claim is—

1. In a slate-ruling apparatus, the combination, with a pair of bars and cross-rods passing through these bars, of distensible and collapsible devices extending from one bar to the other, and a T-square adapted to operate on this frame, substantially as set forth.

2. A knockdown slate-ruling apparatus substantially as shown and comprising a distensible and collapsible frame and springs, a T-square having a removable tongue, and a scoring device, substantially as shown, the parts being separable and adapted to be folded or packed in a bundle or box of small compass, substantially as set forth.

3. In slate-ruling apparatus, in combination, expansible and collapsible frame and springs, the one member of such frame having a scale marked thereon, a T-square adapted to operate on this frame, such T-square having a removable tongue, and a suitable scoring-tool, substantially as and for the purpose set forth.

4. In slate-ruling apparatus, a scoring device comprising a head and a series of elastic scoring-tools adjustably secured to such head, and slots in the head for receiving the securing screws of the respective scoring-tools, substantially as indicated, whereby the different scoring-tools may be adjusted endwise to render them operative or inoperative, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 1st day of November, 1890.

EDWARD S. CROSS.

Witnesses:

C. H. DORER,
WARD HOOVER.