C. BODMER.

JOINT FOR FOLDING RULES.

APPLICATION FILED DEC. 7, 1908.

928,174. Patented July 13, 1909.

Fig. 1.

Fig. 2.

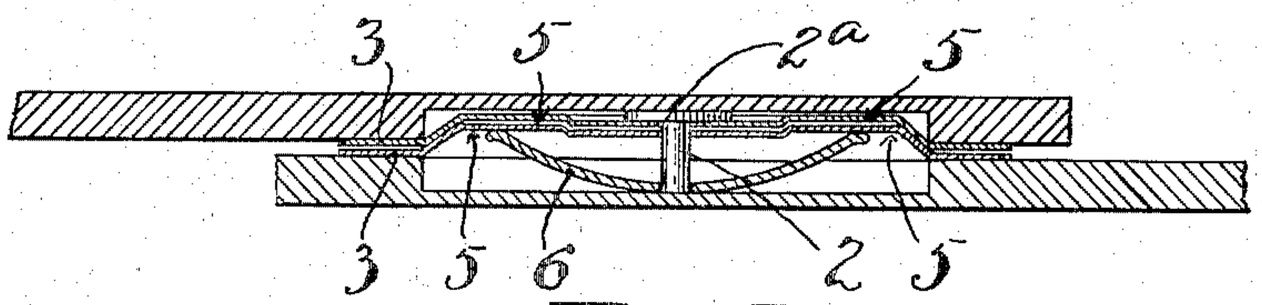


Fig. 3.

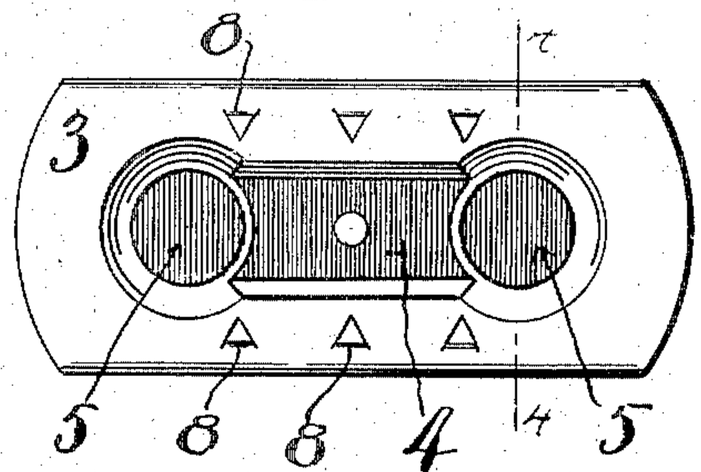


Fig. 4.

Fig. 5.

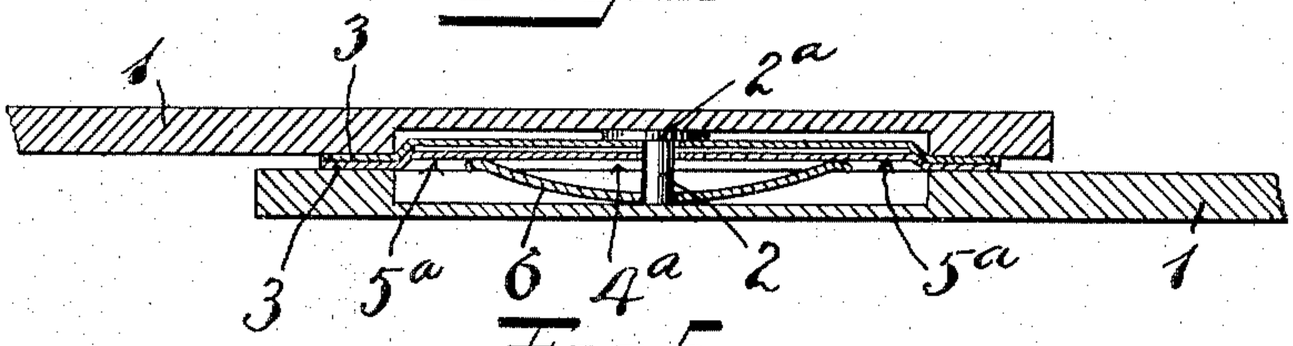
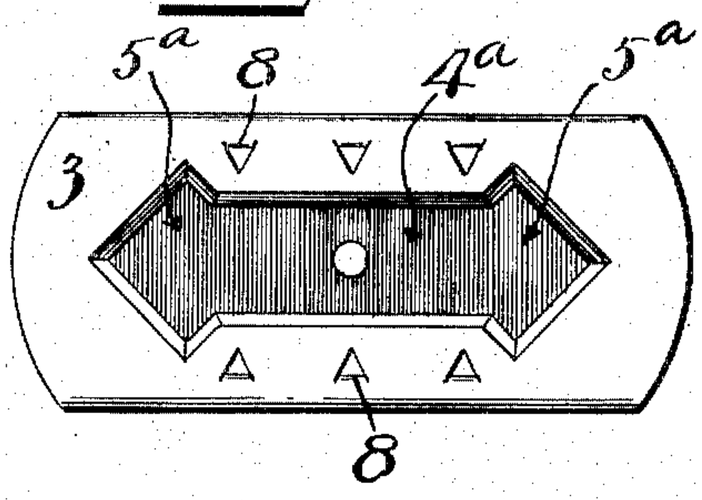


Fig. 6.



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UNITED STATES PATENT OFFICE.

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JOINT FOR FOLDING RULES.

No. 928,174. Specification of Letters Patent. Patented July 13, 1909.

Application filed December 7, 1908. Serial No. 466,227.

To all whom it may concern:

Be it known that I, CHRISTIAN BODMER, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Joints for Folding Rules, of which the following is a full, clear, and exact description.

My invention relates to improvements in rule joints for folding rules of the type sometimes termed "snake rules", in which the several sections are connected by a pivot passing through the flat surfaces of the overlapping ends of said several sections.

One object of the invention is to provide a means whereby the original length of the rule determined by the uniting of the several sections shall, when opened up, be effectually maintained. In the ordinary rule of this character, any imperfection or wear of the pivotal joints (where there are from three to fifteen joints) destroys the accuracy of the measuring length of the instrument. This is by reason of the fact that, when opened up, said sections slide toward, or away, from each other to such an extent as to abnormally shorten or lengthen the rule and prevent perfectly accurate measurement. My improvement overcomes this defect, and also provides a construction which has the maximum perfection of original construction as well as durability and resistance to wear.

In the drawings Figure 1 is an edge elevation of a rule constructed to embody my invention in its preferred form and folded up. In this figure the central part of the folded rule is broken away slightly. Fig. 2 is a relatively enlarged sectional view of one of the joints, said section being taken coincident with the axis of the pivotal connection. Fig. 3 is a plan view of one part of the metallic portion of the joint. Fig. 4 is a section on the line 4—4 Fig. 3. Fig. 5 is a view similar to Fig. 2 and illustrating a modification. Fig. 6 is a plan view of one of the parts of the metallic portion of the modified joint shown in Fig. 5, illustrating a form on which the end enlargements are of the same depth as the intermediate depressions.

In all the figures, 1—1—1 represent the several sections of the rule, upon which the proper graduations (not shown) are placed in the usual manner. These several sections overlap at their ends, and the overlapped portions are connected by suitable pivotal means, whereby said sections may be straightened out into line for the purpose of measurement. The pivot proper is indicated at 2.

3—3 are so-called body plates, arranged in sets of two each for each joint. Both body plates of a single set are of corresponding shape and are struck up along the longitudinal middle line to provide locking recesses on one part and coöperating locking projections on the other part. In the preferred form of these parts (shown in Figs. 1 to 4), 4 is the central longitudinal recessed portion in each body plate, while 5—5 are enlarged and relatively deepened recesses at each end. The projecting portion of one plate is arranged to nest and interlock in the recessed portion of the other plate, when the plates are in line. The walls bounding these projected and recessed portions 4—5 are beveled, so that the two body plates 3—3 may be swung around, one upon the other, when sufficient force is applied.

6 is a spring which operates to hold the two body plates 3—3 in yielding engagement. 2 is a pivot pin, which has a head 2^a standing above said plates 3—3, the shank being passed through said plates and spring 6, and being riveted or upset slightly to hold the spring in place. When the offset portions of said plates nest one within the other, said body plates will be held frictionally against independent rotary movement in any direction, each of the enlarged interlocking recesses 5—5 effectively preventing independent endwise sliding movement in either direction of one plate 3 upon the other, irrespective of the wear as the beveled walls serve to take up wear automatically.

Suitable means are provided on both of the body plates 3 for securing them to their respective rule sections 1—1, such, for example, as side clamping flanges 7—7 and the struck-up tangs 8—8.

It is not necessary that the enlarged interlocking ends 5—5 of the recess be of any definite shape, so long as such shape is suitable to prevent or guard against endwise movement in both directions, that being the function of each of said enlargements. In the preferred form, both ends of each recess 4 are provided with an interlocking enlargement 5, although it is possible to dispense with one of such enlargements in one plate, to wit, in the plate which projects into the other.

In Figs. 5 and 6 I have illustrated modified

enlargements 5^a—5^a at each end of the recessed portion 4^a, which enlargements are of angular outline instead of being of curved outline, as shown in Fig. 3, and are also of the same depth as said recess 4^a. Otherwise, the structure of Figs. 5 and 6 is substantially similar to what has already been described.

Since the body plates 3—3 cannot shift longitudinally one upon the other, even though the pivot 2 becomes worn or is loose in the first instance, it follows that the rule sections 1—1 cannot shift longitudinally one upon the other where they overlap, and hence accurate measurement is guaranteed at all times.

The adjacent faces of the rule sections 1—1, where they overlap, are of course recessed, for the purpose of providing space for the reception of the metallic portion of the joint.

In practice it is preferred to have the body plates provided with the recessed portion which crosses the center, as this affords greater frictional resistance, stiffens each plate and provides a spring receiving pocket that affords greater compactness than would be the case if the recesses were only at opposite ends of each plate.

What I claim is:

1. In a rule joint, the combination of two body plates, one of the same having formed across its pivot center and along the longitudinal middle line a recess, said recess having a laterally enlarged locking recess at each end, the other plate having a corresponding projection enlarged at one end and arranged to frictionally interlock in a recess of the first mentioned plate, a pivot, and a spring coöperating with said plates to cause the same to bear frictionally against each other.

2. In a rule joint, two metallic body plates, a pivot passing through the same, a spring arranged to hold said plates into frictional contact, one of said plates having a recess extending longitudinally thereof along the middle line and across the pivot center, both ends of said recess being enlarged laterally, a projection on the other plate conforming substantially to the shape of the recess in the first mentioned plate and arranged to frictionally engage therein when said body plates are in alinement.

3. In a rule joint, two metallic body plates, a pivot therefor, each body plate having a struck down recess extending along the longitudinal middle line and across the central pivot portion, the projected side of one plate entering the recess of the other plate, a spring standing in one recess and held by said pivot, the ends of each recess in each plate being correspondingly widened or enlarged to prevent longitudinal sliding movement of one or the other when the plates are in line.

4. In a rule joint, two metallic body plates, a pivot therefor, one of said body plates being recessed on its longitudinal middle line and across its pivot center, a projection on the other plate arranged to fit in the recess of the first mentioned plate, a spring to yieldingly hold said plates together, each end of the recess being deepened and each end of the projection being correspondingly extended to afford an interlocking connection between said plates when the same are in line and nested to prevent the longitudinal shifting of one plate on the other.

5. In rule joints, two metallic body plates, a pivot therefor, one of said body plates being recessed along the middle line and extending across the center, a locking projection formed in the other plate by recessing one side, a spring standing in said recess last mentioned, both ends of both the recess and the locking projection being relatively enlarged and deepened to afford a second interlocking connection between said plates when the same are in line and nested.

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