

(No Model.)

G. C. GILLESPIE.  
FOLDING RULER.

No. 532,658.

Patented Jan. 15, 1895.

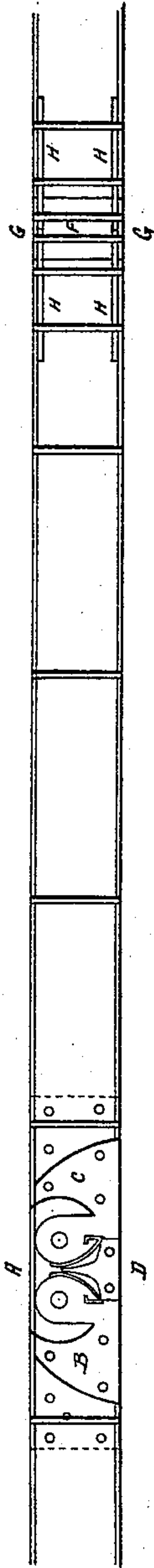


Fig. 1.

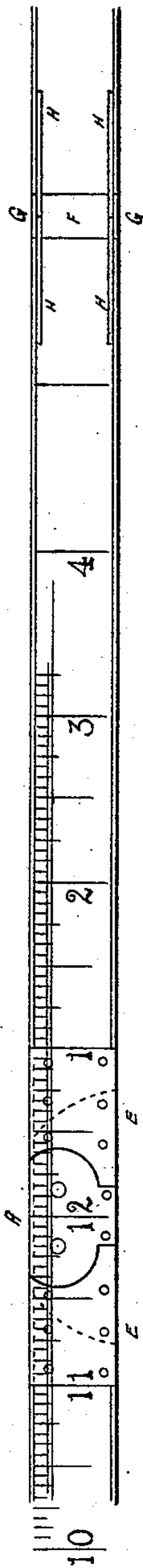


Fig. 2.

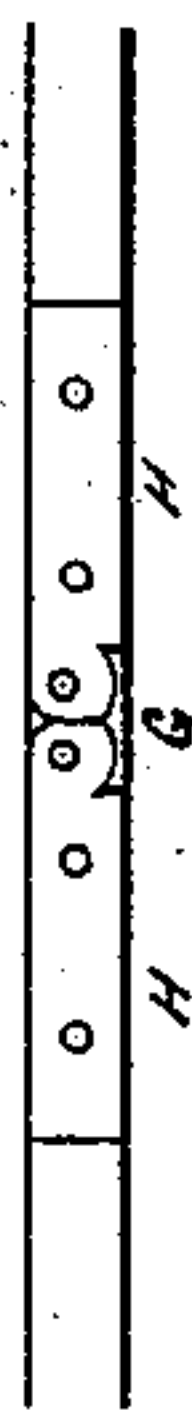


Fig. 3.

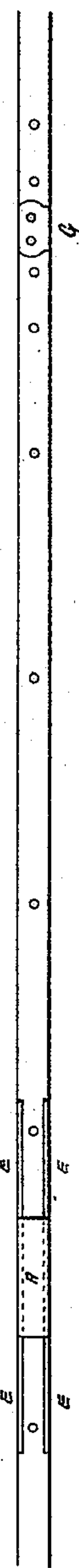


Fig. 4.

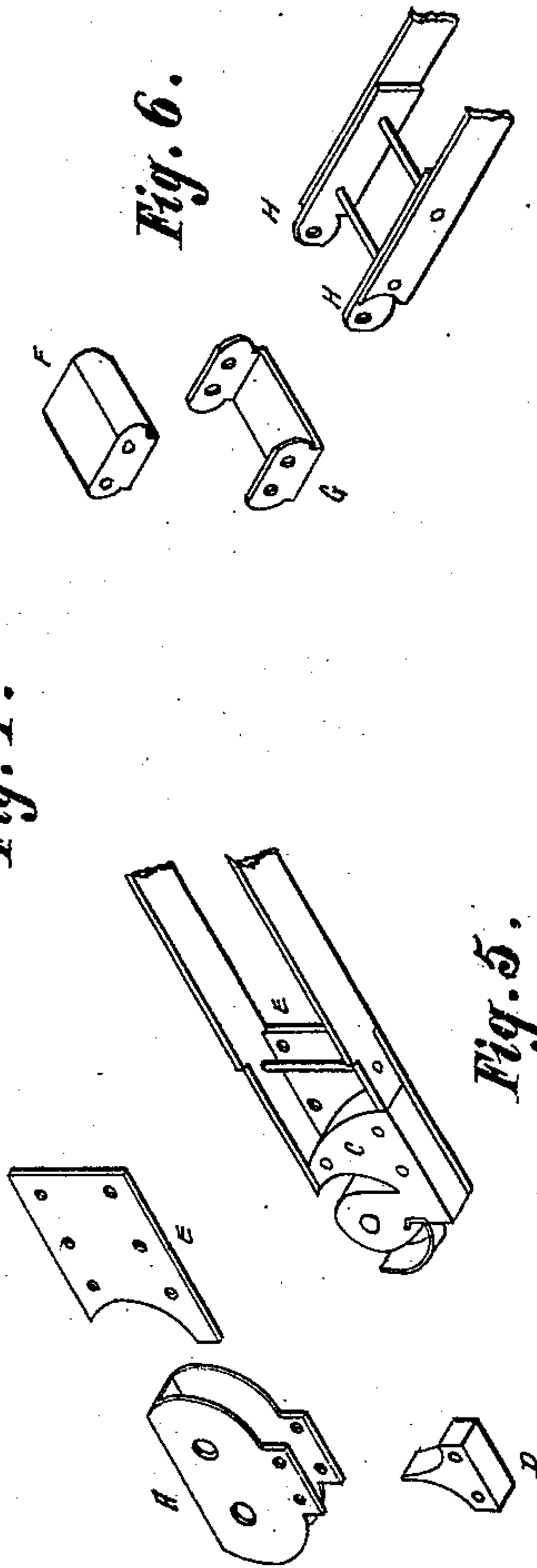


Fig. 5.

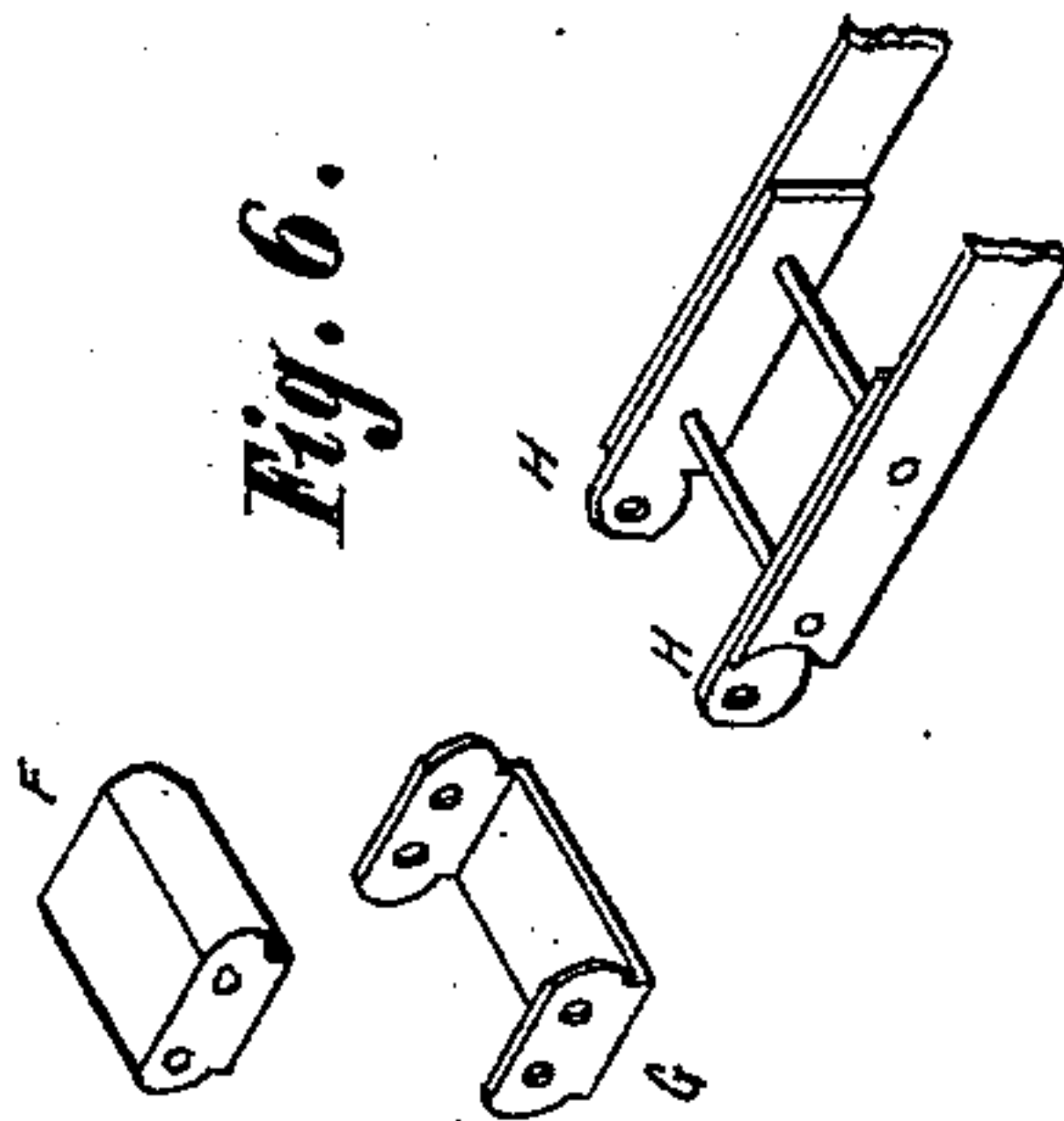


Fig. 6.

WITNESSES:

A. P. Moroney  
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# UNITED STATES PATENT OFFICE.

GEORGE CURTIS GILLESPIE, OF BATH BEACH, NEW YORK.

## FOLDING RULER.

SPECIFICATION forming part of Letters Patent No. 532,658, dated January 15, 1895.

Application filed November 28, 1893. Serial No. 492,225. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE CURTIS GILLESPIE, a citizen of the United States, and a resident of Bath Beach, Kings county, Long Island, New York, have invented a new and useful Improvement in Folding Rulers, of which the following is a specification.

My object is to provide a folding ruler which shall be flush, solid, even and true, without projecting knuckles on any of its sides or edges when the ruler is open; and which shall have the three knuckles and fold in the same compass as the present ordinary folding ruler, an object greatly desired and universally admitted to be advantageous. Further to avoid the numerous mistakes now made with "two foot" rulers when measuring odd feet and inches, I have devised the idea of scaling the ruler from one to twelve inches and starting again with 1, 2, 3, &c., from the center on, or from the previous 12, instead of 13, 14, 15, &c., as at present. I attain these ends by the mechanism, &c., illustrated in the accompanying drawings, in which—

Figure 1, is a vertical section taken edge-wise through the ruler. Fig. 2, is a side elevation showing scaling, &c. Fig. 3, is a sectional view of one of the middle knuckles. Fig. 4, is an elevation of the edge of a ruler showing belly of head knuckle and end of a middle knuckle. Fig. 5, is a perspective detail of the parts of the head knuckle detached, and Fig. 6, is a perspective detail of the detached parts of one of the middle knuckles.

Similar letters refer to similar parts in all the several views.

The parts A, B, C, and D, constitute what is termed the head knuckle and its construction consists of the parts B and C, so formed as to turn on separate centers. Provided with concave recesses concentric with the turning points and extending from the belly to near the back of the ruler legs, these leg members B and C fit into and are secured together by the member A formed to receive them with convex curves on its ends coinciding with the concave recesses in B and C. Said concave and convex curves being struck from the centers of the turning points of B and C converge at the top or belly of member A midway between the turning points, thus bringing the legs when in a closed position closely together.

The concave recesses in B and C slide over the edges of the top of member A and meet in the center. Piece D fits into the bottom or back of member A and forms a stop for the legs when open as shown.

The members B and C are further provided with convex spring lips which engage with and slide in the concave sides of piece D, thus closing against dust, &c., the aperture otherwise left open when the ruler is closed and at the same time making a joint which will always remain stiff, even when the ruler becomes old, preventing it from falling down when held in an upright position. The joint is preferably provided with side plates E fitting on the sides of the legs; provided with concave recesses in their ends coinciding with the concave recesses in B and C and fitting the convex projections on center member A thus making a completely closed, solid and flush joint on all sides when open. See Figs. 2 and 4.

The parts F, G and H constitute what is termed one of the middle knuckles and its construction consists of the parts H H and H H so formed as to turn on separate centers as couples, fitting into and secured together by the piece G and the core member F; which two members (F fitting inside of G) have convex curves on their opposite sides concentric with the turning points of H H and H H and fit corresponding concave curves or apertures in the abutting members of the ruler and the binding on the edges of the legs. A stop is provided at the bottom of F and G to prevent the ruler from being opened beyond a straight line, and this stop is sufficiently wide in F and G so that the bottom curves in H H and H H in folding up do not leave the confines of the recesses in which they fit and thus form a completely closed and dust-tight joint when the ruler is folded up. The sides of the member G are bent in (before assembling) beyond the position they are to occupy when put together and the inherent spring thus formed makes this joint always tight even when the ruler becomes old.

Of course the middle knuckle construction may be used for the head knuckle, or vice versa.

It will be noted by the construction of these joints that each turning point only permits



a quarter turn and is then mechanically stopped, so that by turning a leg of the ruler on only one point a true right angle is formed with the other leg running down to a sharp corner without obstruction of any kind on the inside and by reason of the natural stiffness in the joints will hold itself as placed rigidly enough for all practical purposes. It will be further noted that the constructional sliding curves of the inclosing envelopes A and G in each knuckle if continued to complete circles, would intersect or overlap one another. The overlapping arcs of the parts H H and H H in the smaller knuckles are removed and the stops at the backs or bottoms of the joints are prolonged so that the cords formed by the removal of the arcs do not quite reach the ends of the stops when the rule is folded up, thus keeping the joints closed and impervious to dust.

Having now described the construction and operation of my folding ruler, what I claim as new, and desire to secure by Letters Patent, is—

1. In a folding ruler, the combination of the ruler legs with joints or knuckles, so formed with two turning points each operating within inclosing envelopes formed with intersecting or overlapping circular ends and prolonged stops at backs, as to make flush and continuously uniform, flat and unobstructed surfaces on all sides and edges without projections or recesses when ruler is open, substantially as shown and described.
2. The combination, in a folding ruler of the ruler legs with a head knuckle securing them together so formed as to turn on two separate points: provided with a central member with convex curved ends, said curve struck from the said turning points intersecting or overlapping each other; and leg members formed to fit into central member, each provided with concave recesses extending from the belly of

the joint to near the back, the overlapping curves of which are struck from the turning point of each member, substantially as shown and described.

3. The combination, in a folding ruler, of the ruler legs with a head knuckle, turning on two points, operating within inclosing envelope formed with intersecting or overlapping circular ends, and the leg members of the joint or knuckle being provided with pressure springs for making the joint stiff and keeping out dust or foreign substances when the joint is open or closed, substantially as shown and described.

4. The combination, in a folding ruler, of the separate legs with middle knuckles or joints, so formed as to turn on two points each within a central connecting member: having a stop prolonged or widened at the back of the middle member to prevent the bottom curves of the leg members of the joint from leaving the protection of, or covering provided by the said prolongation of the said stop so as to form a solid and dust-proof joint when the leg members of the ruler are closed, substantially as shown and described.

5. The combination, in a folding ruler, of the legs with the scaling, &c., described, the pieces or parts "A" and B and C with their spring lips, stop D, side plates E E E E of the head knuckle and the parts F, G, and "H H" "H H" of the middle knuckle, all substantially as and for the purposes set forth and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 22d day of November, 1893.

GEORGE CURTIS GILLESPIE.

Witnesses:

J. E. HUMPHREY,  
A. P. MORONEY.