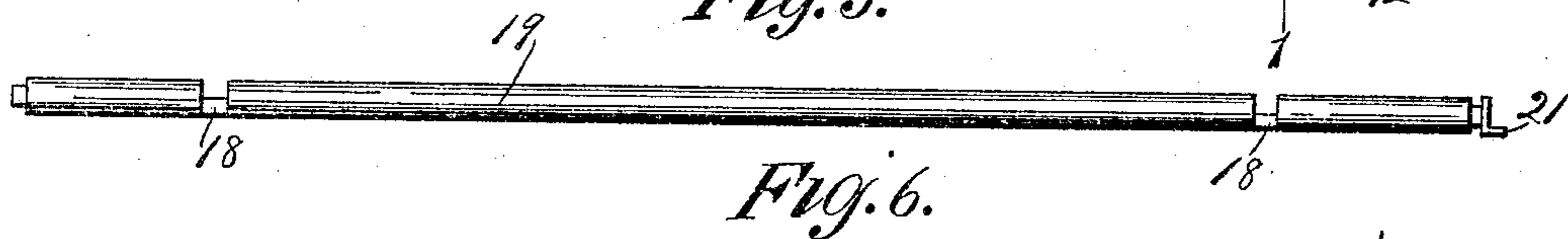
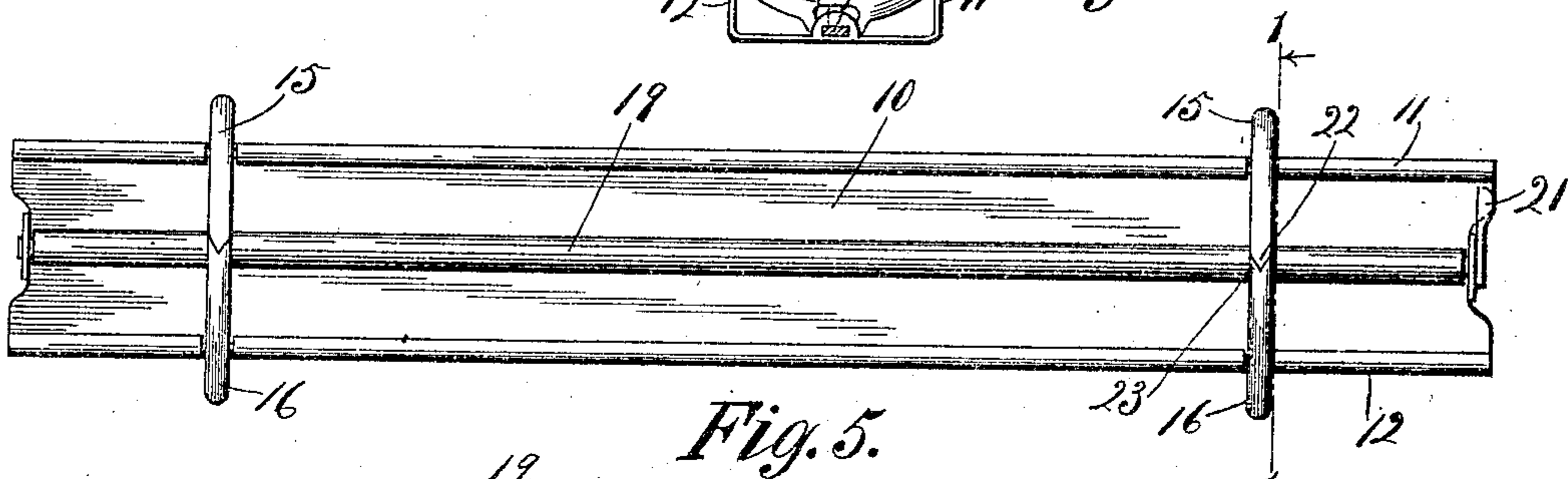
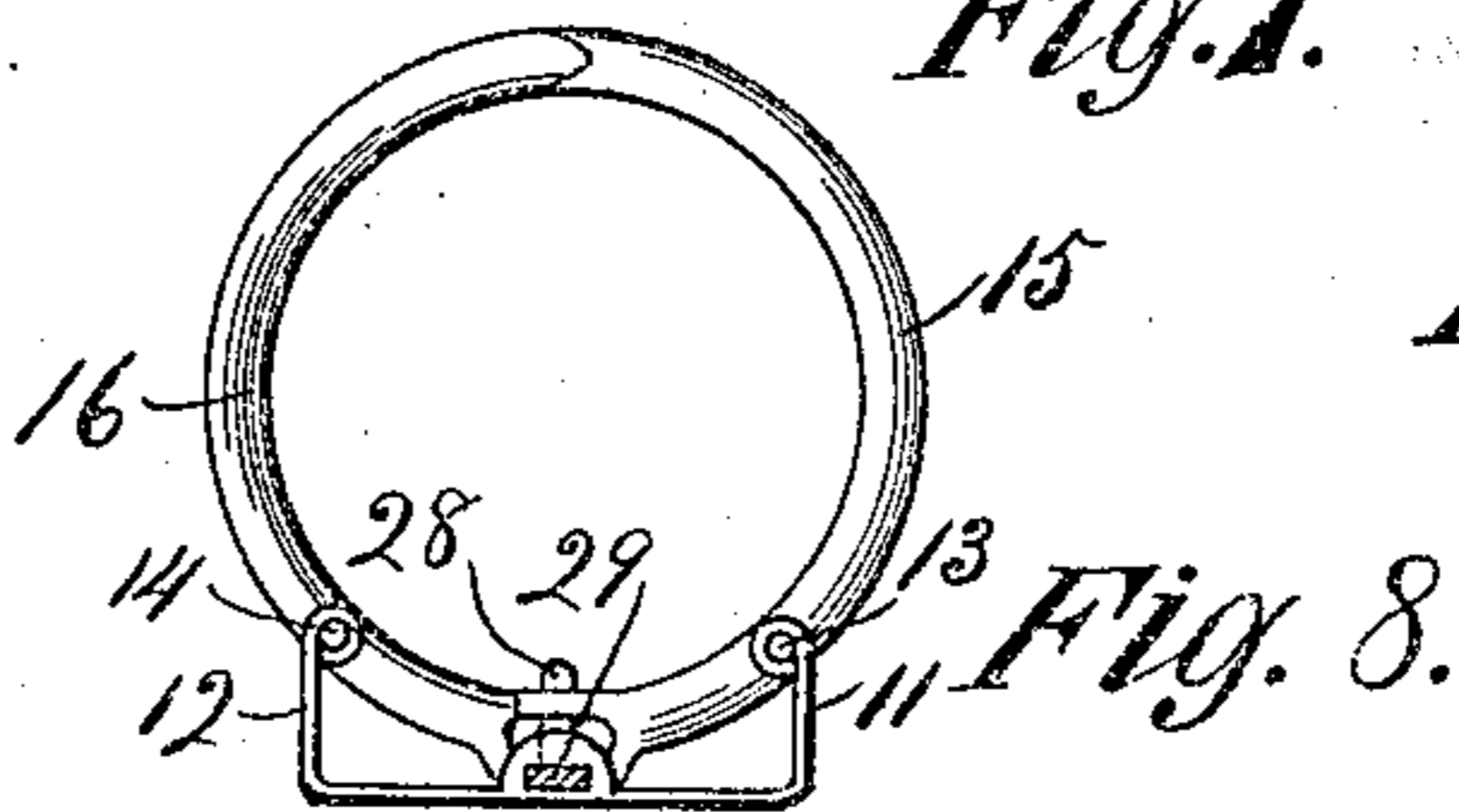
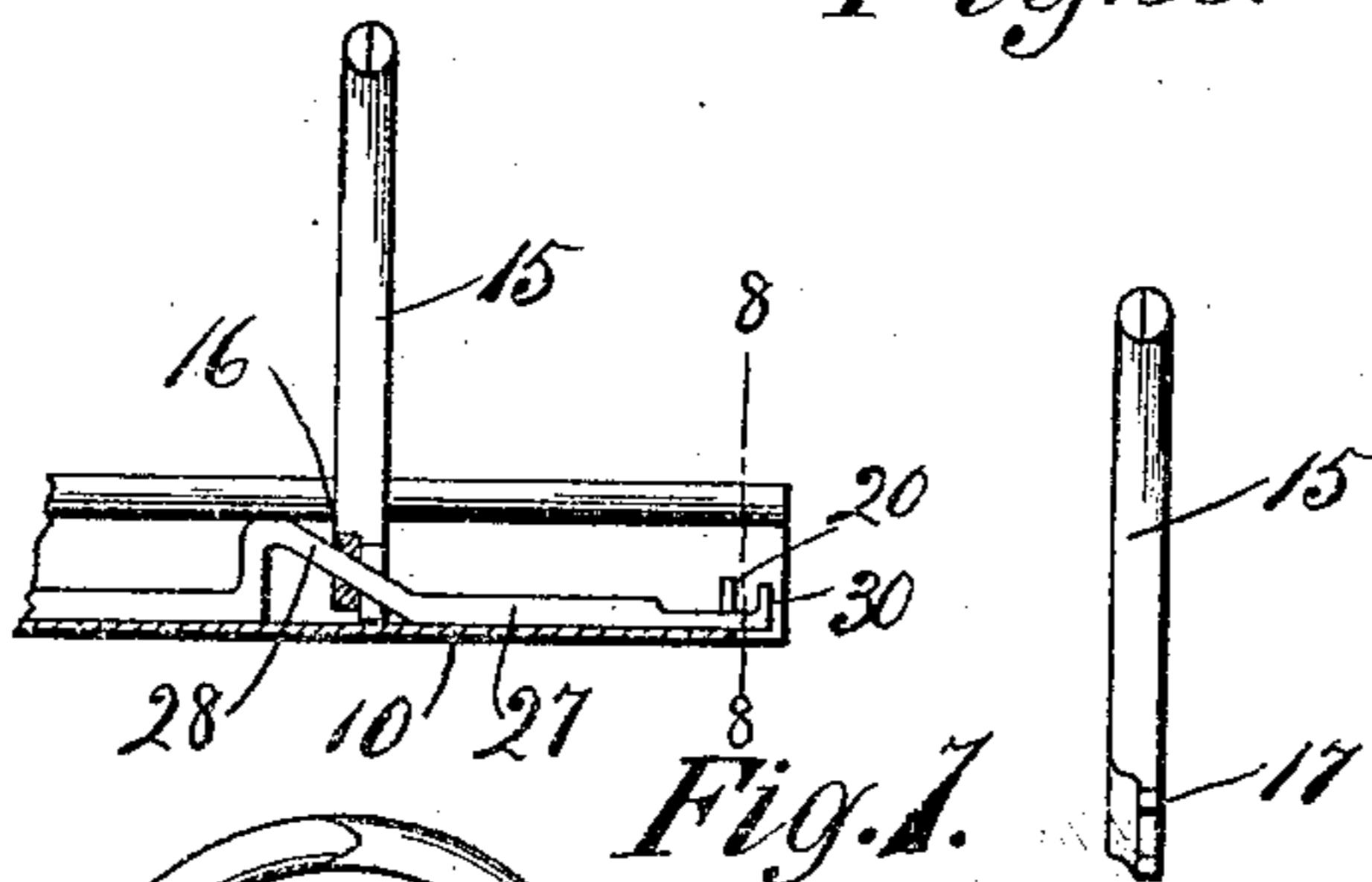
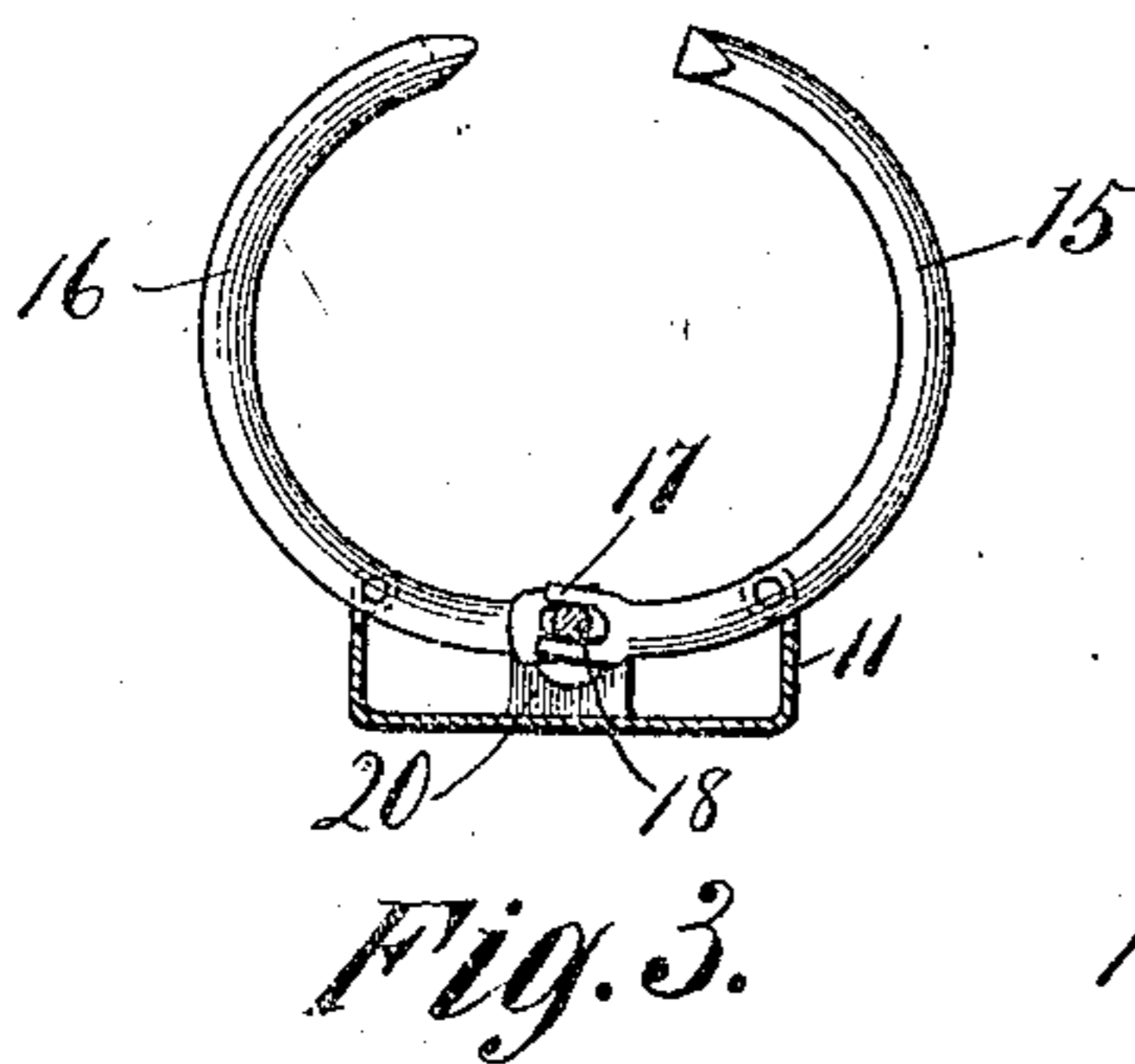
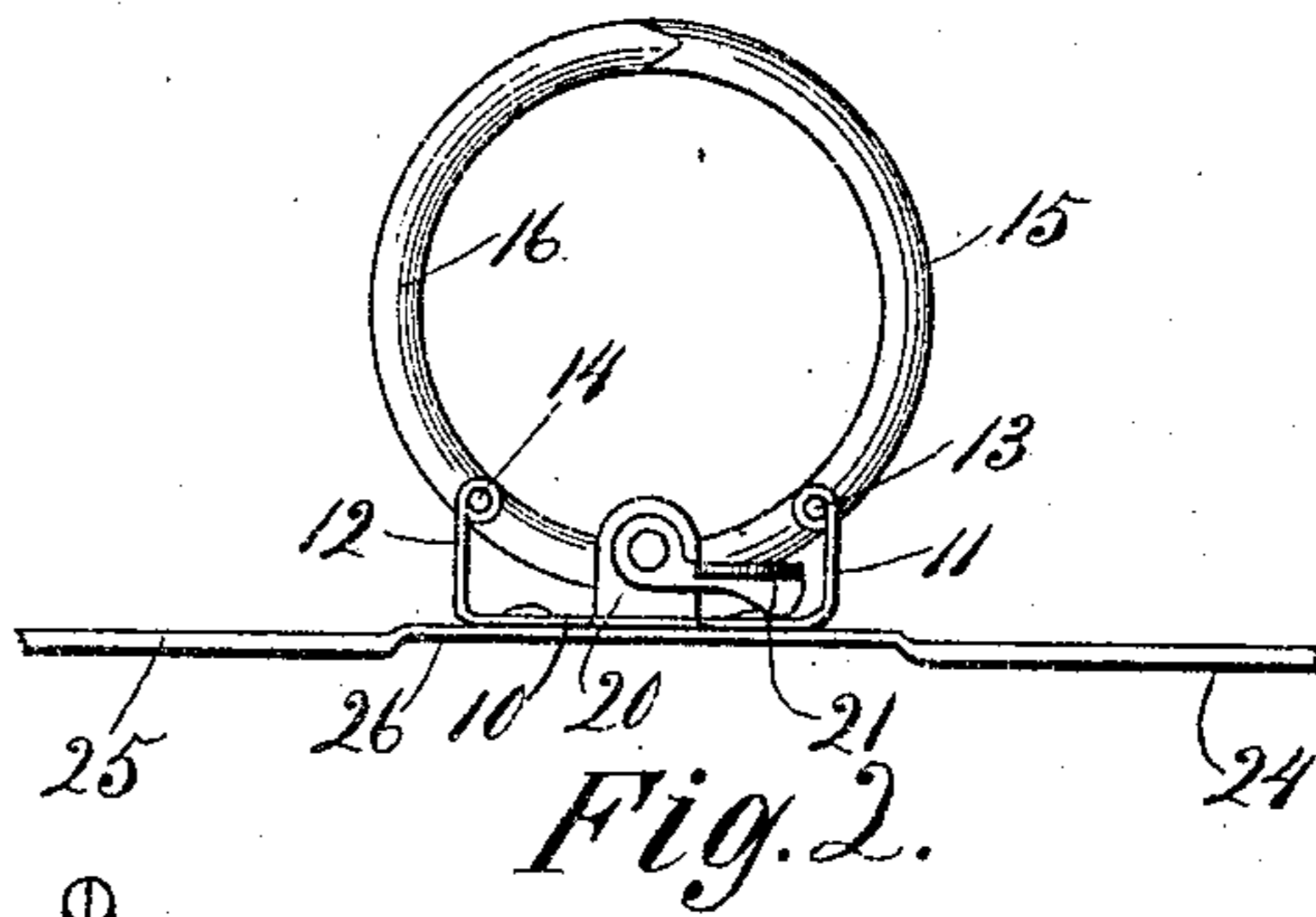
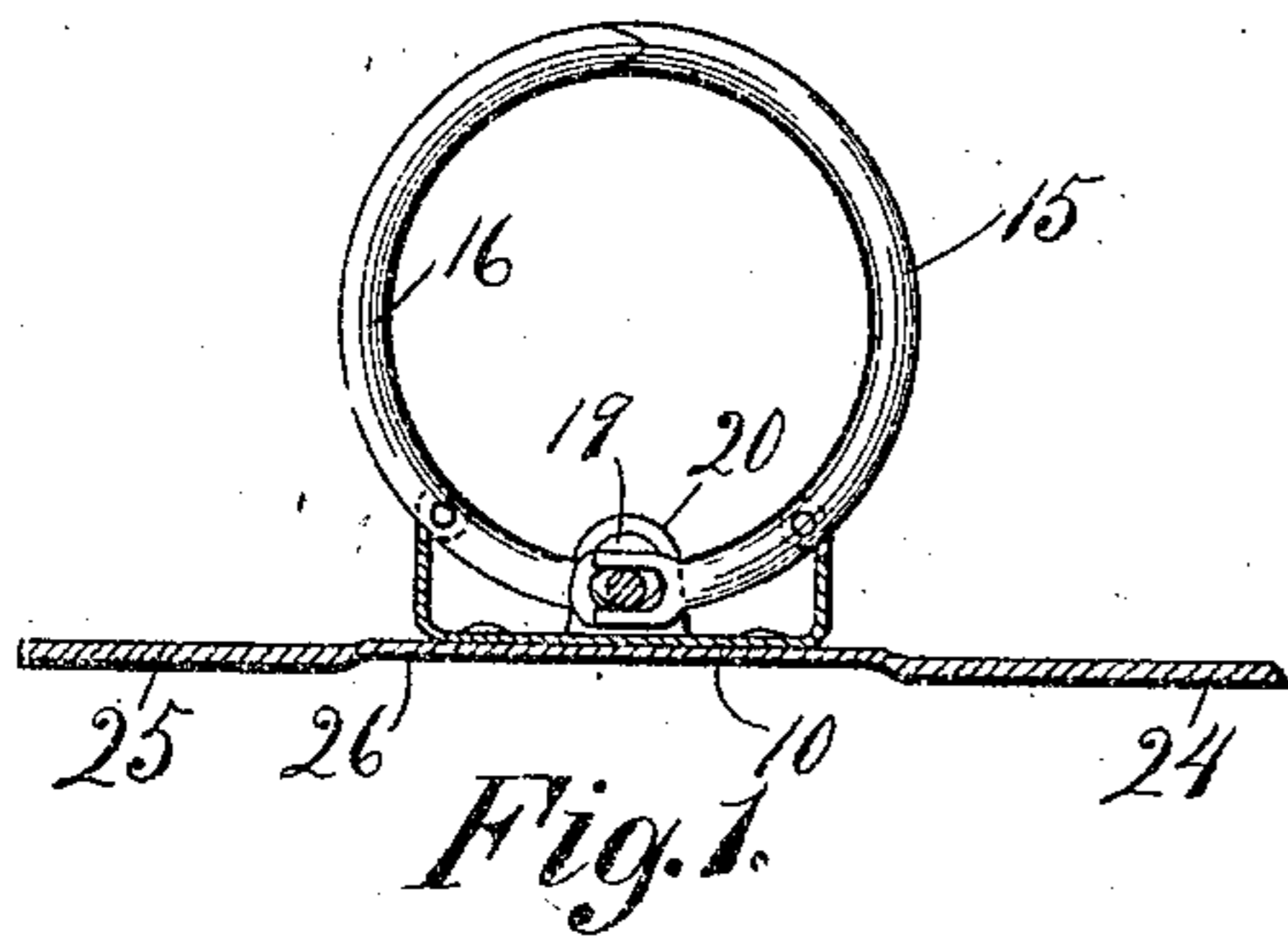


No. 819,368.

PATENTED MAY 1, 1906.

C. R. NELSON
LOOSE LEAF BINDER.
APPLICATION FILED NOV. 30, 1903.



Witnesses:
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Atty.

UNITED STATES PATENT OFFICE.

CHARLES R. NELSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO SIEBER
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LOOSE-LEAF BINDER.

No. 819,368.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed November 30, 1903. Serial No 183,223.

To all whom it may concern:

Be it known that I, CHARLES R. NELSON, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

This invention relates to that class of loose-leaf binders in which impaling and binding prongs are employed for securing the leaves between a pair of book-covers, such prongs or hooks being pivoted so as to reciprocate transversely to the plane of the leaves.

The object of the invention is to improve upon devices of this kind which are particularly adapted for use in books of small form, such as pocket memoranda books, though it may be made of any size.

The invention consists in the parts and arrangement of parts, as hereinafter fully described and as illustrated in the accompanying drawings, in which—

Figure 1 is a detail transverse section on the line 1 1 of Fig. 5. Fig. 2 is a detail end elevation of the binder. Fig. 3 is a view similar to Fig. 1, with the parts in different position. Fig. 4 is a detail of one of the binding prongs or hooks. Fig. 5 is a plan view of the binding mechanism, the cover not being shown. Fig. 6 is a detail of one of the parts. Fig. 7 is a detail longitudinal section showing a modified form of construction, and Fig. 8 is a sectional view on the line 8 8 of Fig. 7.

The base or support for the binding mechanism is a metal plate 10, the width of which is slightly less than the thickness of the book and the length of which is approximately equal to the length of the back of the book. The side edges of this plate are turned up, as shown at 11 12, and the extreme edges of these upturned flanges are rolled preferably inwardly to retain the wires 13 14, which constitute the pivots of the binding prongs or hooks 15 16, the flanges 11 12 being suitably apertured for their accommodation. These prongs or binding-hooks are approximately semicircular in form and are arranged in pairs, the members of each pair being in a common plane, so that their outer ends meet. The inner ends of these semicircular members are flattened and forked, as shown at 17, so that they may overlap and mutually en-

gage the wrist 18 of a crank-shaft 19, which is journaled in upturned flanges 20 at the ends of the plate 10.

At one end of the shaft 19 there is mounted a thumb-piece 21, by means of which the shaft may be oscillated, and as it turns it rocks the members 15 16 on their pivots 13 14, so as to cause their outer ends to mutually approach or recede. The outer ends of the members 15 16 are preferably complementary in form, as shown in Fig. 5, one being pointed, as indicated at 22, and the other being correspondingly recessed, as shown at 23.

The side boards 24 25 of the book have a limp or hinged connection with the plate 10, as by means of a flexible back piece 26, secured to the plate and to the rear edges of the side boards.

In use the binding-hooks 15 16 are supported at their outer ends by turning the shaft 19 so as to raise the wrist 18 relatively as to the plate 10, thereby raising the inner ends of the hooks. The leaves to be bound (not shown) may now be engaged with the hooks in the usual manner, and the shaft 19 being again given a half-turn the binding-hooks are closed together and the leaves securely retained in place.

The device is capable of being made of any desired size, and the range of movement of the binding-hooks may be determined both by the location of the hinge-pins 13 and 14 relatively as to the shaft 19 and by the throw of the wrist 18 of the crank. The drawings are made upon a larger scale than will be followed when the binder is of pocket size.

While the crank-shaft 19 is shown as in the form of a rod turned down to form cranks, it is obvious that a mere bent wire may be used for this purpose.

In the construction shown in Figs 7 and 8 there is substituted for the crank-shaft 19 a sliding rod 27, having an inclined portion 28 for engaging the slotted ends of the hooks 15 and 16, this inclination extending upwardly from the back 10. The rod 27 slides through the lugs 20 at the ends of the plate 10 and is preferably square at its bearing portions, as shown at 29, so as to prevent it from turning. At one end the rod is provided with an upstanding lug 30, by means of which it may be drawn out, and the inclined portion 28 bearing away from this lug it is obvious that the drawing out of the rod will raise the inner

ends of the hooks, so as to swing them about their pivots. The structure above described, and illustrated in Figs. 7 and 8, is not, however, specifically claimed herein, as it is made the subject of a divisional application, Serial No. 239,405, filed January 3, 1905.

I claim as my invention—

1. In a loose-leaf binder, in combination, a back frame; binding-hooks pivoted to the frame intermediate of their ends and having their inner ends slotted; and a crank-rod mounted longitudinally upon the frame and engaging the slotted ends of the hooks.

2. In a loose-leaf binder, in combination, a back frame; binding-hooks pivoted to the frame, one thereof being pivoted intermediate of its ends and having its inner end slotted; and a crank-rod mounted longitudinally upon the frame and engaging the slotted end of the hook.

3. In a loose-leaf binder, in combination, a back plate having upturned sides and ends, cooperating binding-hooks pivoted to the sides thereof and having their outer ends arranged to close together and their inner ends overlapping and slotted; and a crank-shaft journaled in the ends of the back plate and having its wrist portions engaged with the slots of the binding-hooks.

4. In a loose-leaf binder, in combination, a back frame; two sets of hooks, each hook being pivoted to the frame adjacent the side thereof so as to swing in the plane of its curvature and having its inner end extending across the frame in the plane of the body of the hook; and a rod mounted longitudinally upon the frame and operatively engaging the hooks by a cam action to swing them on their pivots.

5. In a loose-leaf binder, in combination, a back frame; cooperating hooks pivoted at the opposite sides of the frame so as to swing each in the plane of its curvature and having overlapping inner ends; and a rod mounted longitudinally on the frame and operatively engaging the hooks by a cam action to rock them on their pivots.

6. In a loose-leaf binder, in combination, a back frame; side members hinged thereto; cooperating-hooks pivoted at the opposite sides of the frame and independent of the side members of the binder, so as to swing in the plane of their curvature, and having overlapping inner ends; and a rod mounted longitudinally on the frame and operatively engaging the hooks to rock them on their pivots.

7. A binder of the character described having a backbone, a pivoted leaf-engaging finger or prong thereon and a crank for manipulating the same, said crank being loosely associated with said finger and adapted to assume a dead-center position in either of two

arrangements of the parts to lock the finger open or closed.

8. A binder of the character described comprising a backbone, a plurality of pairs of pivoted fingers thereon oppositely disposed to constitute rings, and a corresponding number of cranks one engaging each pair of fingers for simultaneously manipulating the fingers of the respective pairs.

9. A binder of the character described comprising a backbone, a plurality of pairs of pivoted fingers thereon oppositely disposed to constitute rings, and a corresponding number of cranks one engaging each pair of fingers for manipulating the fingers of the respective pairs.

10. A binder of the character described comprising a backbone, a plurality of pairs of pivoted fingers thereon oppositely disposed to constitute rings, and a corresponding number of cranks for manipulating the fingers of the respective pairs, one of said cranks being loosely associated with its pair of fingers and adapted to assume a dead-center position relative thereto.

11. In combination with a channel member, leaf-engaging fingers pivoted intermediate their ends to the flanges of said member, and means in engagement with the inner ends of said fingers and shiftable transversely of the channel members for manipulating the same.

12. A binder of the character described having a backbone, a pair of pivoted fingers thereon oppositely disposed to constitute a ring, and a crank for positively shifting said fingers said crank being loosely associated with said fingers and adapted to assume a dead-center position in either of two arrangements of the parts to lock the fingers open or closed.

13. A binder of the character described having a backbone, a pair of pivoted fingers thereon oppositely disposed to constitute a ring, and a crank shiftable in the direction of opening of the leaves for opening and closing said fingers.

14. In a loose-leaf binder, in combination, a hook, means for pivotally supporting the same, said hook having a slotted portion, and a crank-rod engaging said slotted portion to shift the hook on its pivot.

15. A binder of the character described, comprising a backbone, a plurality of movable leaf-engaging fingers thereon, and a corresponding number of cranks for manipulating said fingers, one of said cranks being operatively associated with its finger to assume a dead-center position relative thereto.

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