No. 763,176. PATENTED JUNE 21, 1904.

G. H. GRESHAM & J. SCHADE, Jr.

LOOSE LEAF BINDER.

APPLICATION FILED JULY 30, 1903.

NO MODEL.

Fig. 1.

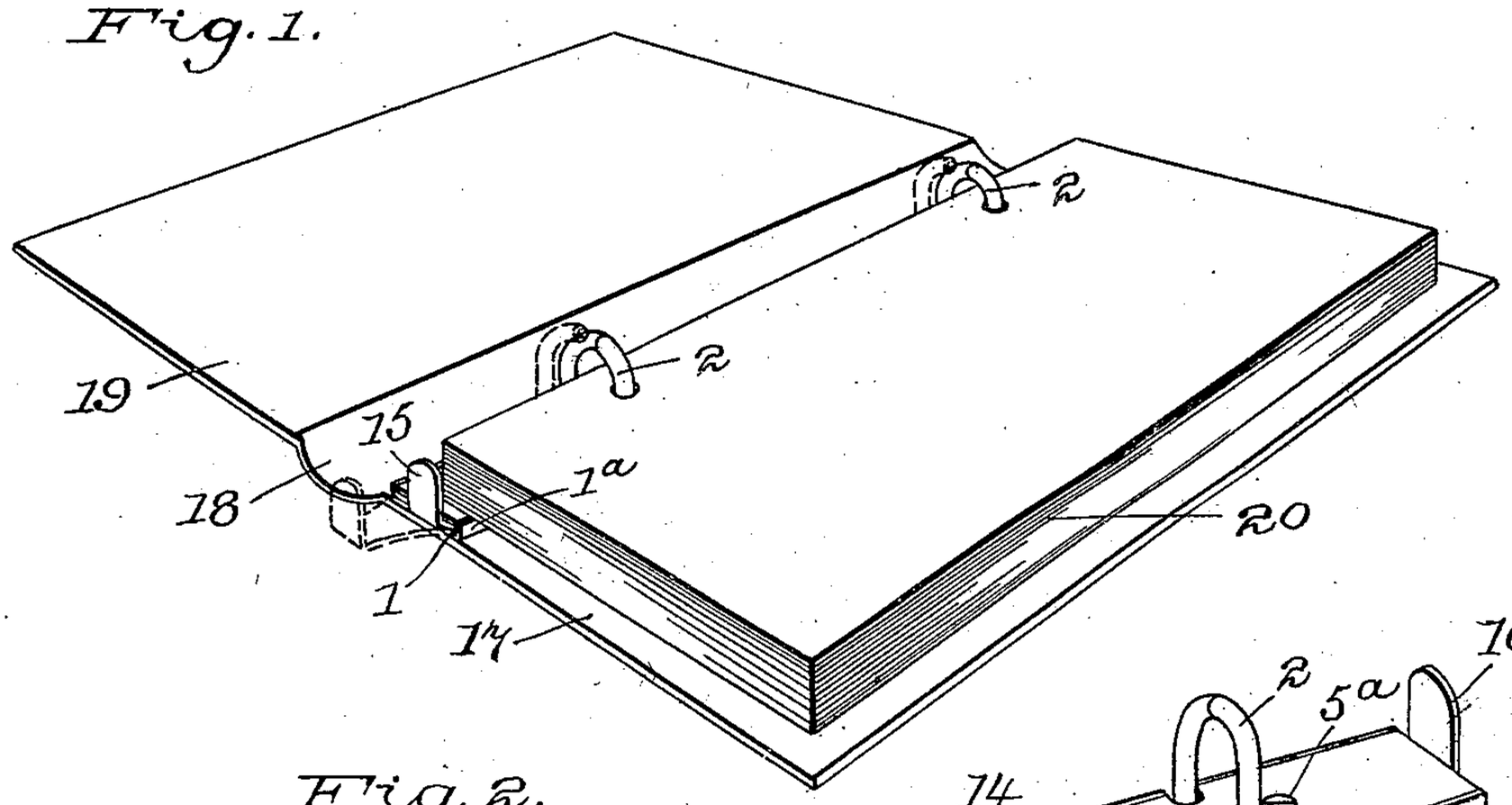


Fig. 2.

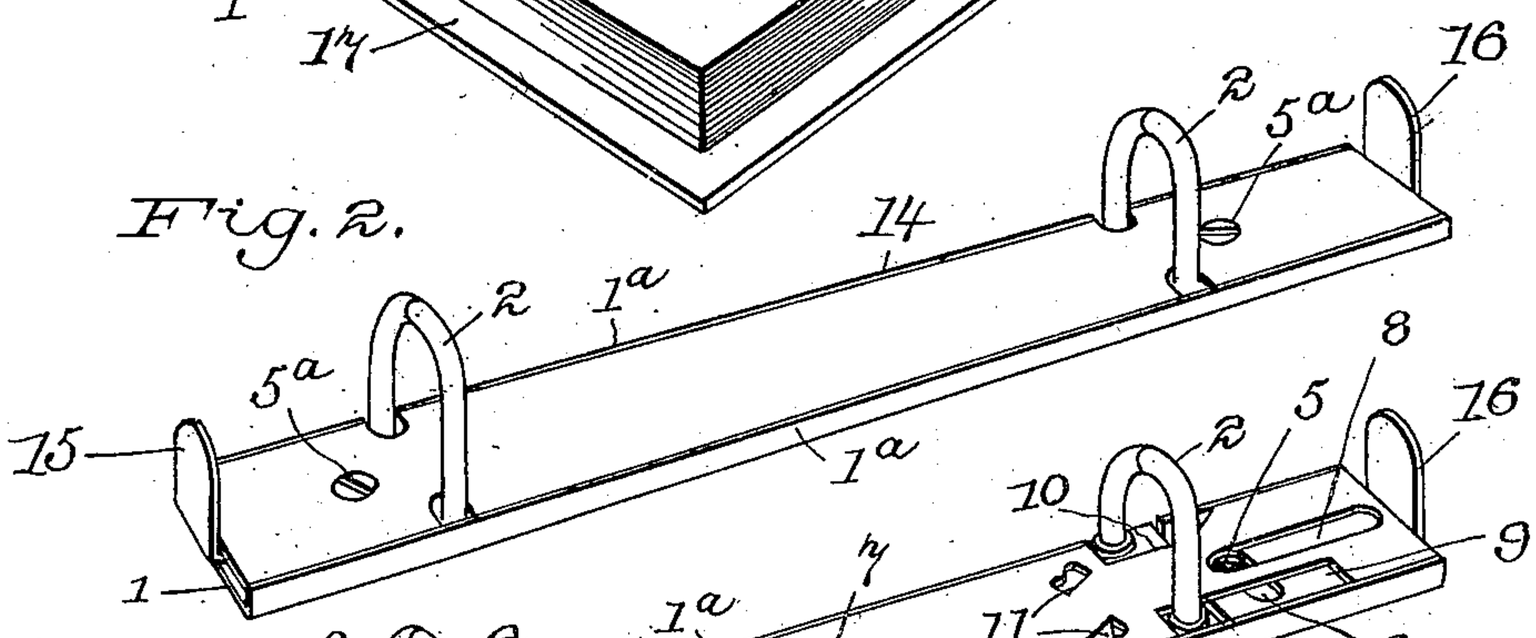


Fig. 3.

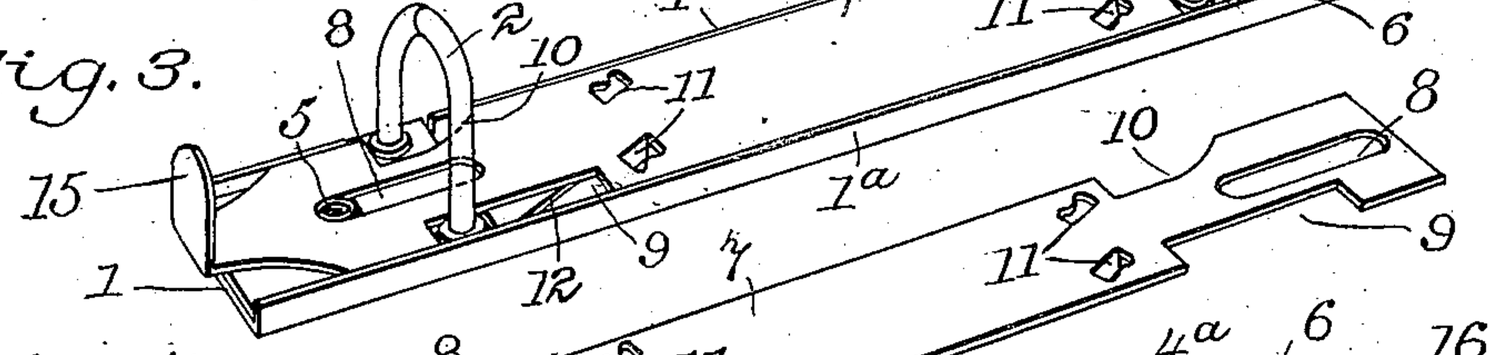


Fig. 4.

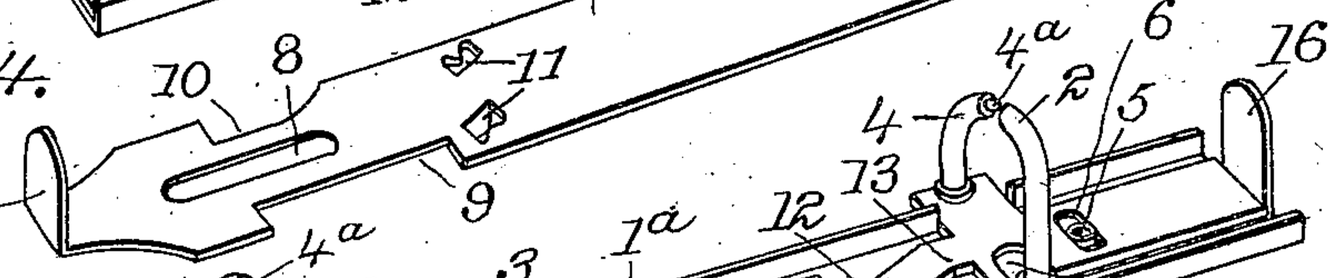


Fig. 5.

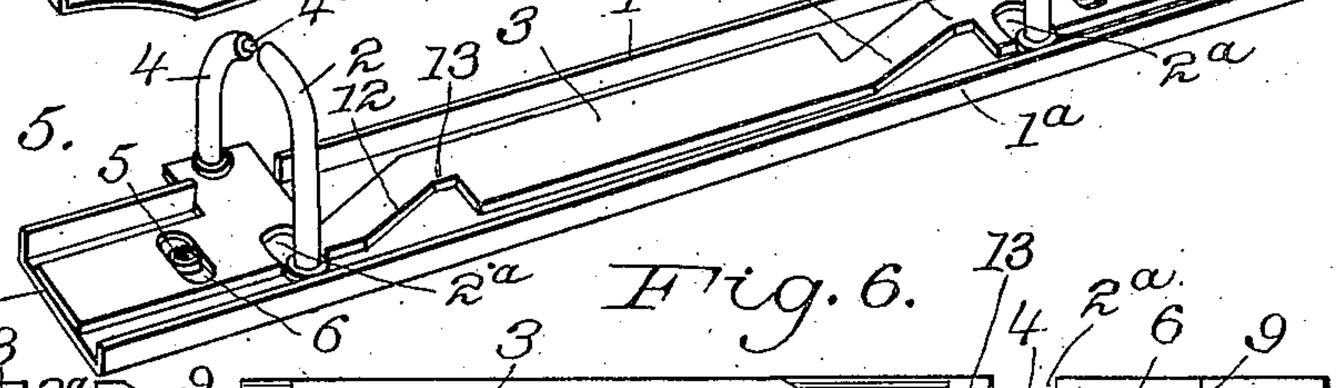
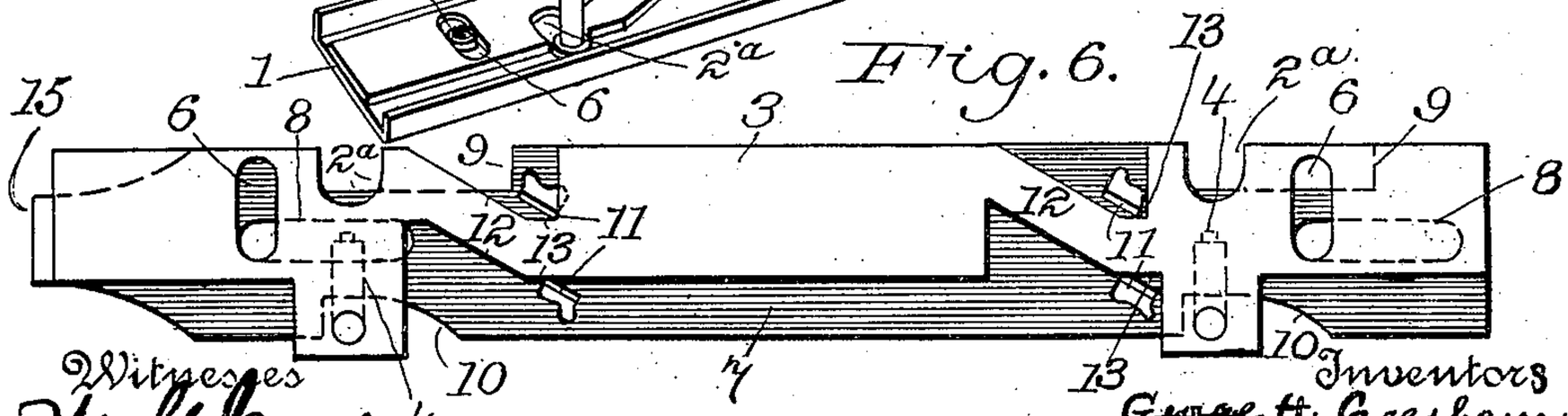


Fig. 6.



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No. 763,176. Patented June 21, 1904.

UNITED STATES PATENT OFFICE.

GEORGE H. GRESHAM AND JOHN SCHADE, JR., OF NEW YORK, N. Y.

LOOSE-LEAF BINDER.

SPECIFICATION forming part of Letters Patent No. 763,176, dated June 21, 1904.

Application filed July 30, 1903. Serial No. 167,572. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. GRESHAM, a resident of the borough of Manhattan, county of New York, and JOHN SCHADE, Jr., a resident of the borough of Brooklyn, county of Kings, city and State of New York, citizens of the United States of America, have invented certain new and useful Improvements in Loose-Leaf Binders, of which the following is a specification.

Our invention relates in general to temporary binders.

More specifically it relates to that class of temporary binders in which reciprocating jaws are employed, and comprises mechanism for reciprocating and locking said jaws.

The preferred form of apparatus embodying our invention is illustrated in the accompanying sheet of drawings, in which—

Figure 1 is a perspective view of the complete binder embodying our invention, one leaf of the cover being turned back, the full lines showing the position of the parts when the jaws are closed and the dotted lines showing the position of the movable parts when the jaws are open. Fig. 2 is a perspective view of the binder mechanism separate from the cover. Fig. 3 is a similar view of the binder mechanism with the top plate removed. Fig. 4 is a similar view of the sliding plate or member. Fig. 5 is a similar view of the binder mechanism after the top plate and sliding plate have been removed, leaving the reciprocating plate in position on the binder-plate. Fig. 6 is a bottom view of the reciprocating plate or member and the sliding plate or member, the relative position shown being the one which locks the binder.

Throughout the drawings like reference-figures indicate like parts.

1 is the binder-plate or fixed plate, which preferably has raised edges 1^a 1^a. Upwardly-projecting jaws 2 2 are fixed on this binder-plate. A reciprocating plate 3, carrying jaws 4 4, is mounted on the binder-plate and guided thereon by means of the thimbles 5 5 and slots 6 6 or equivalent means. Preferably one jaw of each pair, as 4 4, is provided with a projection 4^a 4^a, which registers with a depression (not shown) in the opposite jaw 2 2.

7 is a longitudinally-sliding plate resting on the reciprocating plate 3 and guided on the binder-plate 1 by means of the slots 8 8, cooperating with the thimbles 5 5 or equivalent means. This sliding plate has cut-away portions 9 9 to permit its motion by the jaws 2 2 and cut-away portions 10 10 to permit its motion by the jaws 4 4. It is also provided on its under side with projections 11 11, &c., which may be formed by stamping up portions of the plate itself, as shown. These projections engage with the cam-surfaces 12 and 13, formed on the reciprocating plate 3 by cutting the same away, as shown in Figs. 5 and 6, or in any other convenient way. The top plate 14 fits over the above-described parts and is held in position by means of the screws 5^a 5^a engaging the interiorly-threaded thimbles 5 5 or by any other convenient means. The sliding plate 7 has a handle 15 formed at one end by bending up a portion of the plate or in any other convenient manner, and the binder-plate 1 has a handle 16 formed at the other end in a similar manner. The reciprocating plate 3 is cut away at 2^a 2^a to permit it to move toward and from the jaws 2 2.

The binder device is most conveniently employed by fastening it to one leaf 17 of a cover composed of a back 18 and another leaf 19, as shown in Fig. 1. A series of perforated leaves 20 of any kind may then be inserted in the binder and fastened therein or removed therefrom by means of the following operation of the parts: On grasping the sliding plate 7 by the handle 15 and pulling it toward the left it is evident that the lugs or projections 11 will slide over the cam-surface 12, which is oblique to the line of travel of the sliding plate 7, and force the reciprocating plate 3 and the jaws 4 4, carried thereby, away from the fixed jaws 2 2, thereby opening the jaws in a position shown in dotted lines in Fig. 1 and in full lines in Fig. 5. In this position leaves 20 can be removed and replaced at will. On grasping the handle 15 and forcing the sliding plate 7 to the right the projections 11, engaging the cam-surface 12, will cause the jaws 4 4 to approach the jaws 2 2 during the first part of the motion, and the parts are so proportioned

that when the lugs 11 reach the end of the oblique portion 12 of the cam-surface the jaws 4 4 will be forced into contact with the jaws 2 2. Further motion of the sliding plates 7 forces the lugs 11 11 onto the portion 13 of the cam-surface which is parallel to the line of travel of the plate 7, and thereby the reciprocating plate 7 and the jaws 4 4 are rigidly locked in a position which holds the jaws closed. This locking action is due to the fact that the portions 13 13 of the cam-surfaces are at right angles to the line of travel of the reciprocating plate 3, and consequently no amount of lateral pressure on said reciprocating plate will cause a movement of said lugs 11 while they are in engagement with this portion of the cam-surface. The handle 16 affords a convenient means for grasping the apparatus while sliding the plate 7 back and forth, thereby reducing the liability of tearing the mechanism from the cover 17 and also permitting the use of the mechanism independent of any cover attachment.

The advantages of our invention comprise its simplicity and compactness of construction and operation, the one continuous movement of the sliding plate 7 both moving and locking the jaws.

It is evident, of course, that various changes might be made in the details of construction shown without departing from the spirit and scope of our invention. A greater or less number of pairs of jaws might be employed and the particular form of cam connection might be varied. Various of the coöperating parts might be reversed in their relations one to another without changing the relative motions and functions thereof, and other means for guiding the various parts upon the binder-plate might be employed, as well as other means for holding the various parts together. All such changes, however, we regard as mere mechanical changes and the resulting construction still within the principle of our invention.

Having therefore described our invention, what we claim as new, and desire to protect by Letters Patent, is—

1. In a temporary binder, the combination of a pair of jaws and a cam mechanism for opening and closing said jaws, said cam mechanism comprising a sliding member and a cam coöperating therewith, one part of the face of which cam is oblique to the line of travel of said sliding member and another part of the face of which cam is parallel to said line of travel.

2. The combination of a fixed binder-plate and a series of jaws fixed thereon, a reciprocating member and a series of jaws fixed thereon and adapted to register with the first-mentioned series of jaws, a sliding member guided in the binder-plate, a cam-surface formed on the reciprocating member, and projections from the sliding member engaging said cam-surface, said cam-surface comprising two sections, one oblique to the line of travel of the sliding member and the other parallel to said line of travel.

3. The combination of a cover comprising a back and two leaves hinged thereto, with a flat binder-plate mounted on one of said leaves adjacent to the back, jaws projecting upwardly from said binder-plate, a reciprocating member and one or more jaws fixed thereon and adapted to register with the first-mentioned jaw or jaws, a sliding member guided in the binder-plate and a cam connection between the reciprocating member and the sliding member, one part of the cam being oblique to the line of travel of the sliding member, and another part of said cam being parallel to said line of travel.

4. The combination of a binder-plate and jaws carried thereby, a reciprocating plate mounted and guided in said binder-plate and jaws carried by said reciprocating plate and coöperating with the first-mentioned jaws, said reciprocating plate being cut away to form cam-surfaces, parts of which are oblique to the line of travel of the reciprocating plate and parts of which are at right angles to said line of travel, a sliding plate guided in the binder-plate so as to move at right angles to the line of travel of the reciprocating plate and projections on said sliding plate engaging the cam-surfaces on the reciprocating plate, substantially as described.

5. The combination of a binder-plate and one or more jaws fixed thereon, a reciprocating member and one or more jaws fixed thereon and adapted to register with the first-mentioned jaw or jaws, a sliding member guided in the binder-plate and a cam connection between the reciprocating member and the sliding member, one part of the cam being oblique to the line of travel of the sliding member, and another part of said cam being parallel to said line of travel, together with a handle on one end of the binder-plate and a second handle on the other end of the sliding plate.

Signed at Brooklyn, New York, this 25th day of July, 1903.

GEORGE H. GRESHAM.
JOHN SCHADE, Jr.

Witnesses:
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ALVAH E. REED.