May 15, 1934. N. S. WELK 1,958,932

LOOSE LEAF BINDER

Filed Jan. 25, 1933 2 Sheets-Sheet 1

FIG. 1.

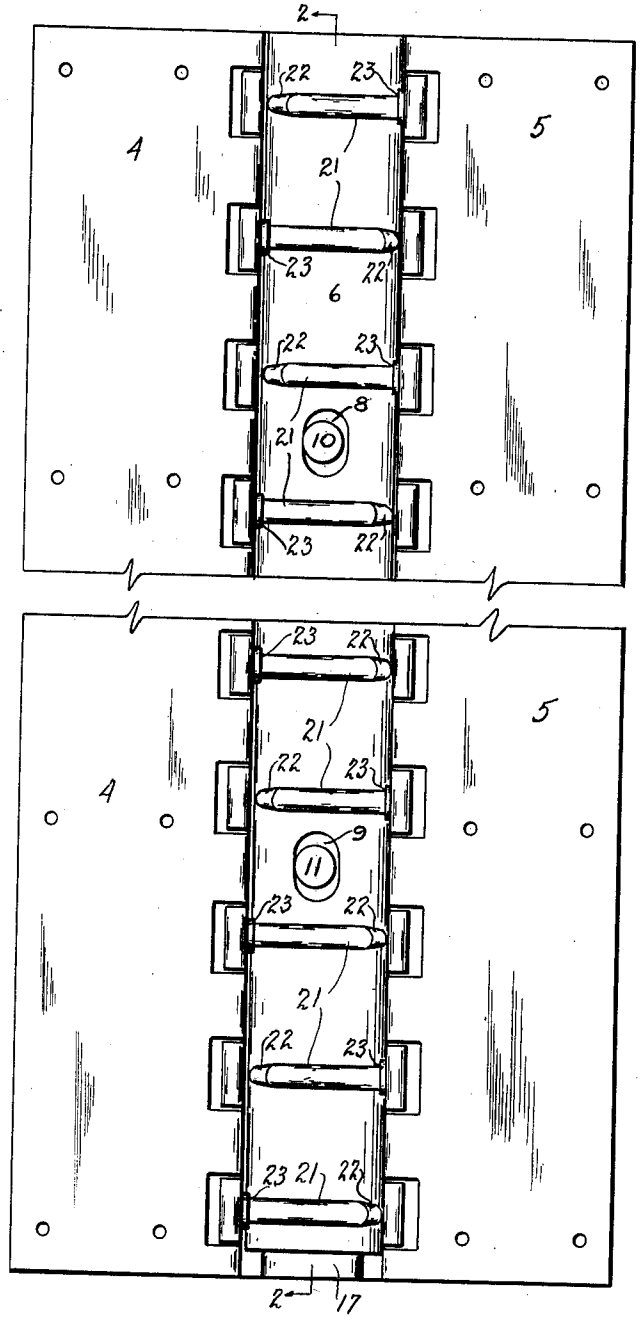
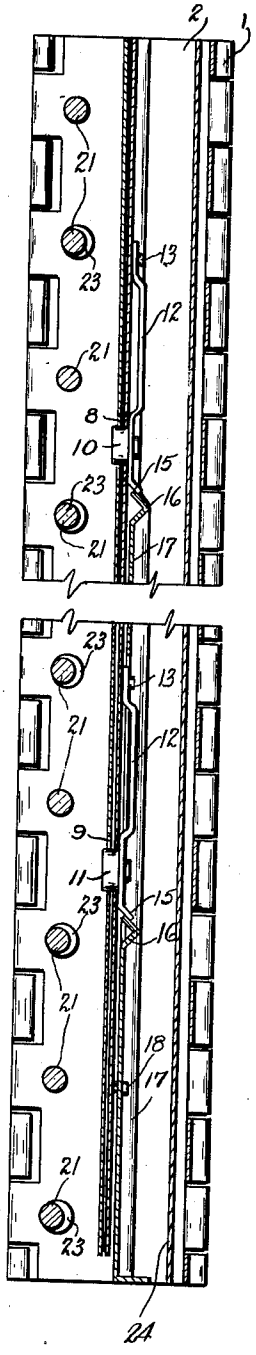


FIG. 2.



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FIG. 3.

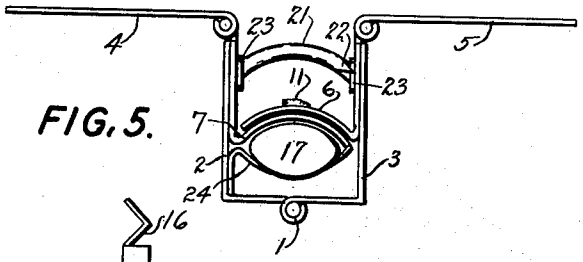


FIG. 4.

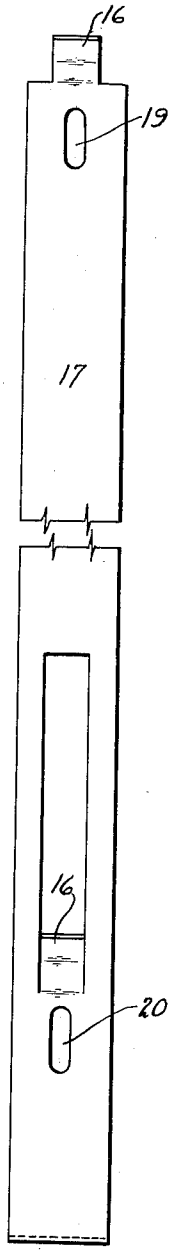


FIG. 5.

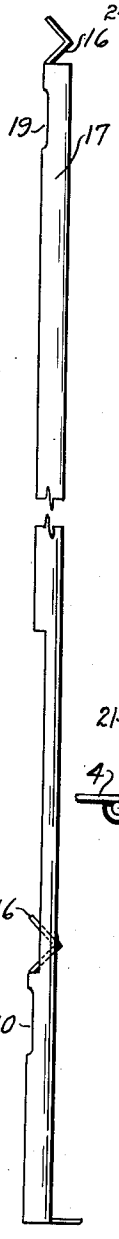


FIG. 6.

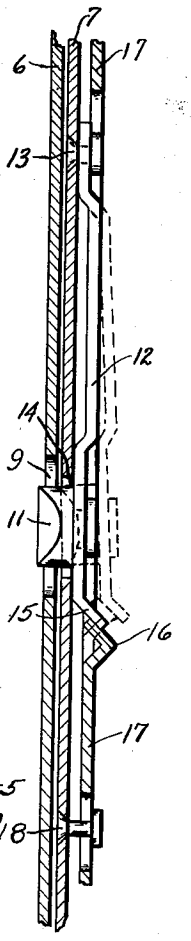
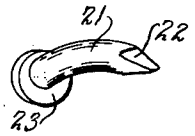


FIG. 7.



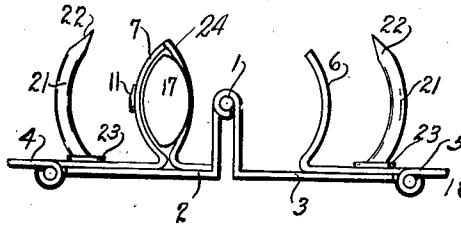


FIG. 8.

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UNITED STATES PATENT OFFICE

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LOOSE LEAF BINDER

Nelson S. Welk, Athens, Ohio, assignor to The McBee Company, Athens, Ohio, a corporation of Ohio

Application January 25, 1933, Serial No. 653,441

7 Claims. (Cl. 129—17)

My invention relates more particularly to that type of binders which are termed "analysis binders".

My invention has for its object to provide a new and improved means of locking the binders for the loose leaves in position.

A further object is the provision of a novel construction for the binding posts which will tend to keep the sheet body in line and will materially assist in preventing the holes from being torn out of the sheet. It is well known that this condition is one which is constantly present in all loose leaf binders and is a source of considerable annoyance.

By the use of my improvement it is largely lessened, if not entirely eliminated.

My means of accomplishing the foregoing objects may be more readily understood by having reference to the accompanying drawings which are hereunto annexed and made a part hereof, in which

Fig. 1 is a plan view of my improved binder;

Fig. 2 is a section taken on the line 2—2 in Fig. 1 in the direction indicated by the arrows;

Fig. 3 is an end elevation of the binder as shown in Fig. 1;

Figs. 4 and 5 are detailed views of the reciprocable bar for disengagement of the lock;

Fig. 6 is an enlarged detail view of the locking mechanism;

Fig. 7 is an enlarged detailed view of one of the binding posts or pins, and

Fig. 8 is an end elevation with the binder in unlocked position.

Similar reference numerals refer to similar parts throughout the entire description.

As shown in the drawings, the binder comprises a U shaped member, the bottom part of the U being hingedly connected as at 1, the sides 2 and 3 of the U may, if desired, be provided with extensions 4 and 5 which are hingedly connected thereto although these extensions are not absolutely necessary and they need not be hinged. On the inside of the sides 2 and 3 of the U are secured two inwardly extended plates 6 and 7 which are arcuate in cross section. These plates are adapted to be telescopically intervolved one above the other as clearly seen in Fig. 3. The plate 6 is provided with a plurality of spaced apertures 8 and 9 which are adapted to receive lock bolts 10 and 11. This plate is preferably arcuate in cross section, this serving as a backing for the sheets. When so constructed it tends to prevent them from working on the posts and to keep the perforations from being torn. These bolts 10 and 11 are suitably secured to flat springs 12, one end of which is secured by means of a rivet 13 to the lower plate 7. Apertures 14 are provided through which the lock bolts are projected by the tension exerted by the spring. The end 15 of each of the flat springs 12 is inclined as clearly seen in Fig. 6 and is adapted to be engaged by a correspondingly inclined surface 16, formed on a reciprocable bar 17 which is slidably secured to the lower surface of the lower plate 7. As illustrated rivets 18 are provided on plate 7 which are mounted in slots 19 and 20 which permit the bar 17 to be reciprocated.

The top of the posts 11 and 10 is beveled, as clearly seen in Fig. 6, towards the edge of the upper plate 6. This permits the edge of the upper plate to depress the bolt when the binder is being moved into closed position whereas if the bevel were omitted it would possibly strike against the edge of the locking bolt and would have to spring over it but, by the provision of the beveled end, the plate very smoothly and conveniently depresses the bolt so that the plates telescope each other very uniformly until the bolts reach the apertures 8 and 9 and the spring projects the bolts into these registering apertures thereby locking the binder firmly in position. The binding posts or pins 21 are mounted on the inside of the sides 2 and 3 of the U alternately. Preferably these posts are arcuate when viewed in side elevation for convenience in holding the loose leaves in the binder when it is open. The free ends of the pins 21 are preferably pointed as at 22 to facilitate their insertion into the leaves to be bound. The body of the pins 21 is similar in size to the perforations in the loose leaves which are to be held in the binder. The base 23 of pins, however, is provided with an enlarged portion which is of greater diameter than the perforations in the leaves. This serves as a backing for riveting the posts in position.

It has been found in practice that this device very satisfactorily accomplishes this result. Preferably the locking mechanism is enclosed by a cover 24 which extends the entire length of the binder so that the locking mechanism is completely enclosed.

Having described my invention what I regard as new and desire to secure by Letters Patent is—

1. In a lose leaf binder, a U shaped member comprising two parts hingedly connected at the bottom of the U, a plurality of transversely extended alternate posts, secured to the sides of the U, a reinforcing strip secured to each of said sides which terminates in an inwardly extending

plate arcuate in cross section, said plates being adapted to be telescopically intervolved one above the other, there being a plurality of spaced openings in the top plate, a corresponding number of spring pressed locking members on the lower plate which project into such openings, a reciprocable bar secured to the underside of said lower plate, means on said bar to withdraw said locking members from engagement with the upper plate, the tops of said locking members being beveled whereby they will be depressed on contact with the edge of the upper plate.

2. In a loose leaf binder, a U shaped member comprising two parts hingedly connected, a plurality of transversely extending arcuate posts, alternately secured to the sides of the U, an inwardly extending plate arcuate in cross section secured to each side of said U, said plates having a plurality of registering spaced apertures therein, a plurality of locking members in the apertures of the lower plate adapted to project into the apertures in the upper plate, springs which hold said locking members normally projected, a reciprocable bar which disengages said locking members from the apertures when moved in one direction and releases them when moved in the other.

3. In a loose leaf binder, a U shaped member comprising two parts hingedly connected, a plurality of transversely extending arcuate posts, alternately secured to the sides of the U, an inwardly extending plate arcuate in cross section secured to each side of said U, said plates having a plurality of registering spaced apertures therein, a plurality of locking members in the apertures of the lower plate adapted to project into the apertures in the upper plate, springs which hold said locking members normally projected, a reciprocable bar which disengages said locking members from the apertures when moved in one direction and releases them when moved in the other, the tops of said locking members being beveled whereby they will be depressed on contact with the edge of the upper plate.

4. In a loose leaf binder, a U shaped member comprising two parts hingedly connected, a plurality of transversely extending arcuate posts, alternately secured to the sides of the U, an inwardly extending plate arcuate in cross section, secured to each side of said U, said plates having a plurality of registering spaced apertures therein, a plurality of locking members in the apertures of the lower plate adapted to project into the apertures in the upper plate, springs which hold said locking members normally projected, a reciprocable bar which disengages said locking members from the apertures when moved in one direction and releases them when moved in the other, and a cover for said locking mechanism.

5. In a loose leaf binder, a U shaped member comprising two parts hingedly connected at the cross bar of the U, a plurality of transversely extended arcuate posts alternately secured to the sides of the U, an inwardly extending plate arcuate in cross section secured to each side of said U, said plates having a plurality of registering spaced apertures therein, a plurality of lock bolts in the apertures of the lower plate adapted to enter the apertures in the upper plate, a flat spring secured to the lower plate adjacent each aperture, a lock bolt being secured to said spring which registers with said aperture, the end of said bolt being beveled towards the edge of said lower plate, the free end of said spring being inclined, a reciprocable bar secured to said lower plate, means thereon which engage the inclined portions of said springs to withdraw said lock bolts from said apertures.

6. In a loose leaf binder, a U shaped member comprising two parts hingedly connected at the cross bar of the U, a plurality of transversely extended arcuate posts alternately secured to the sides of the U, an inwardly extending plate arcuate in cross section secured to each side of said U, said plates having a plurality of registering spaced apertures therein, a plurality of lock bolts in the apertures of the lower plate adapted to enter the apertures in the upper plate, a flat spring secured to the lower plate adjacent each aperture, a lock bolt being secured to said spring which registers with said aperture, the free end of said spring being inclined, a reciprocable bar secured to said lower plate, means thereon which engage the inclined portions of said springs to withdraw said lock bolts from said apertures.

7. In a loose leaf binder, a U shaped member comprising two parts hingedly connected at the cross bar of the U, a plurality of transversely extended arcuate posts alternately secured to the sides of the U, an inwardly extending plate arcuate in cross section secured to each side of said U, said plates having a plurality of registering spaced apertures therein, a plurality of lock bolts in the apertures of the lower plate adapted to enter the apertures in the upper plate, a flat spring secured to the lower plate adjacent each aperture, a lock bolt being secured to said spring which registers with said aperture, the end of said bolt being beveled towards the edge of said lower plate, the free end of said spring being inclined, a reciprocable bar secured to said lower plate, means thereon which engage the inclined portions of said springs to withdraw said lock bolts from said apertures, and a cover for said locking mechanism.

NELSON S. WELK.