

July 21, 1931.

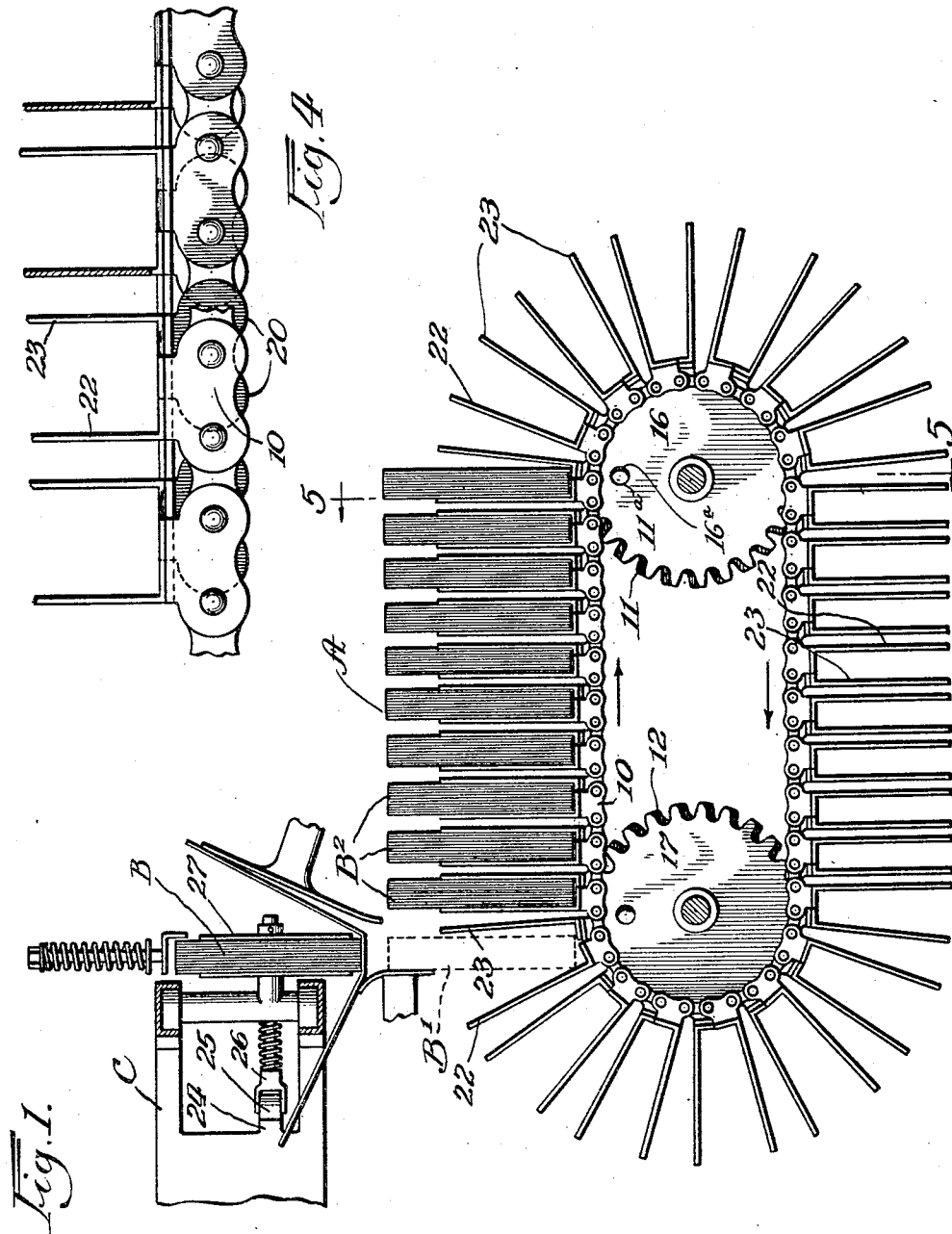
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1,815,372

MACHINE FOR PRESSING BOOKS

Filed Nov. 1, 1928

4 Sheets-Sheet 1



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July 21, 1931.

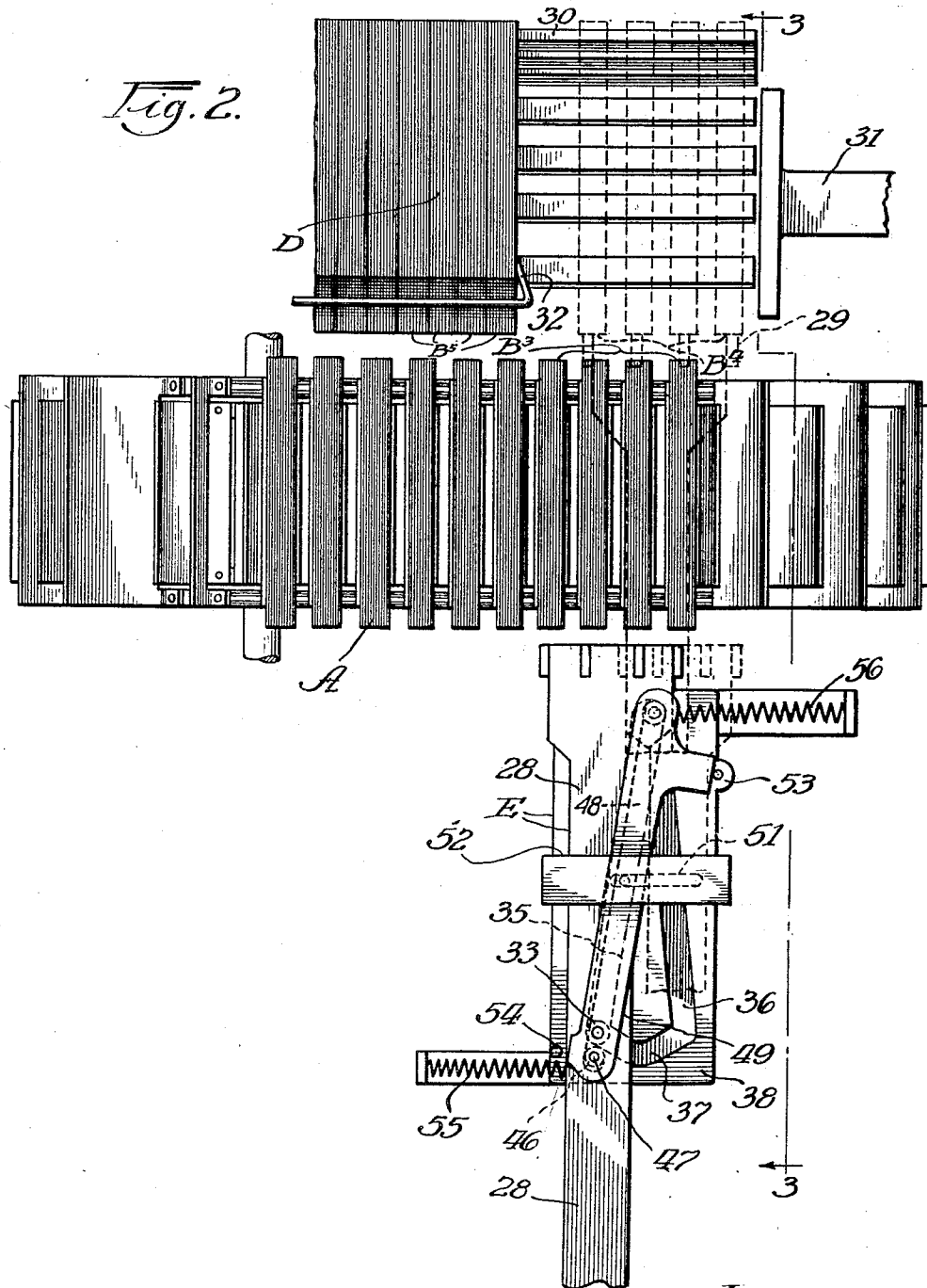
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MACHINE FOR PRESSING BOOKS

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4 Sheets-Sheet 2



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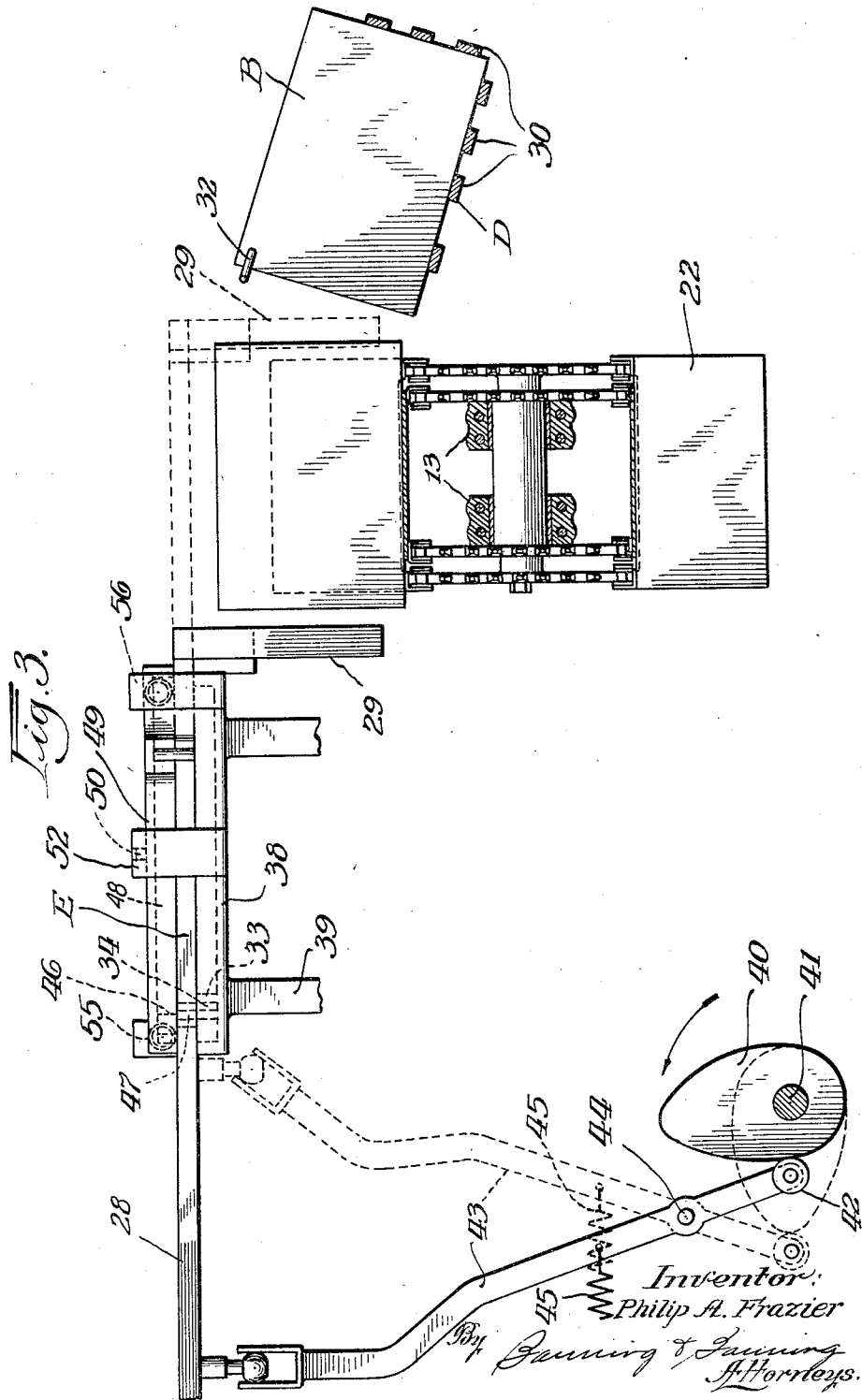
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Fig. 5.

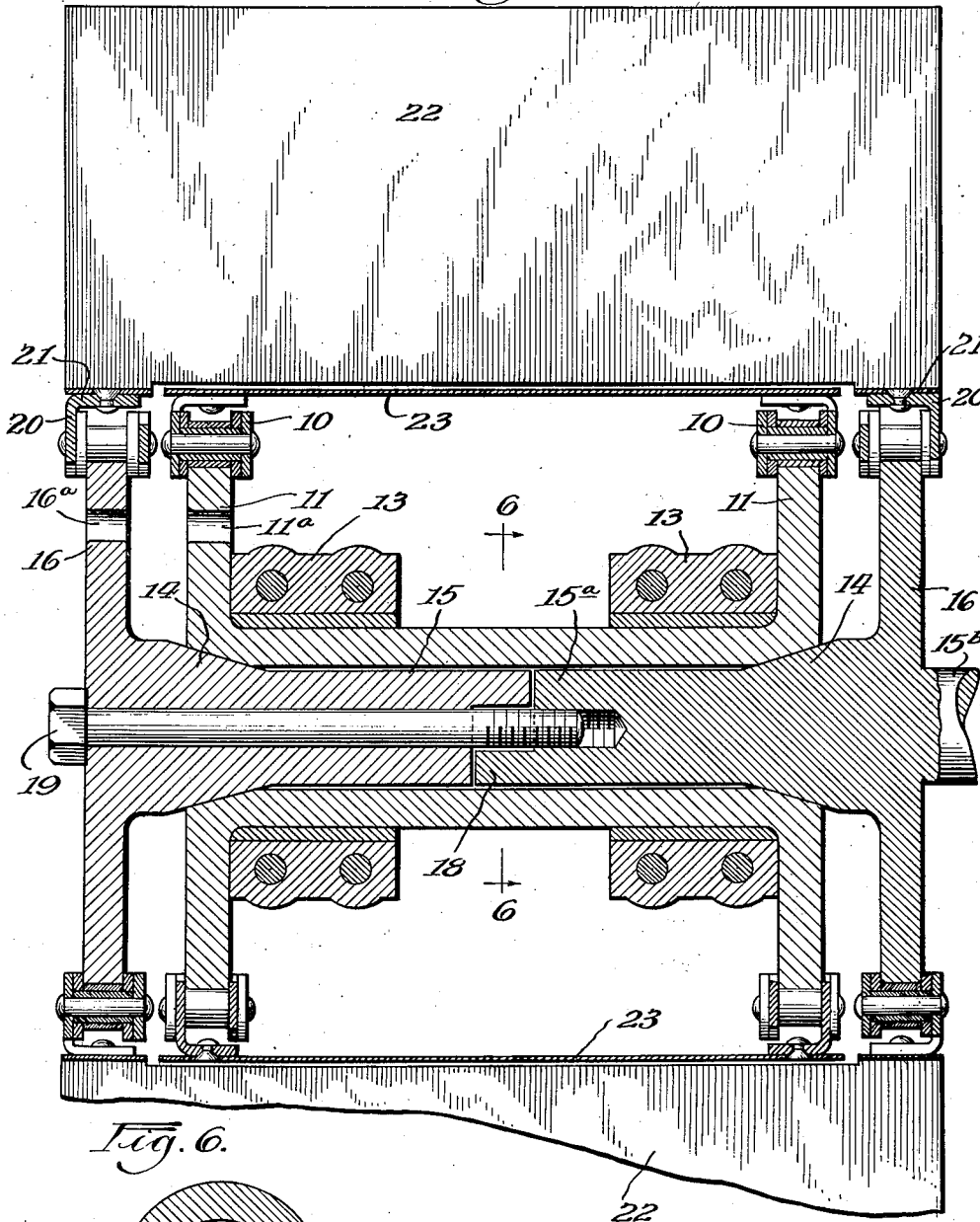
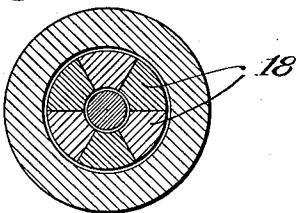


Fig. 6.



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UNITED STATES PATENT OFFICE

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MACHINE FOR PRESSING BOOKS

Application filed November 1, 1928. Serial No. 316,527.

This invention relates to a machine for pressing books and the like, and is particularly intended to receive books from a binding machine such as that shown and described in the patent to Bredenberg No. 1,073,324. Books of this type have the backs of the signatures cut away so as to expose the edge of each sheet of paper. These raw edges are then covered with glue, and the whole is then bound together by a strip of "super" and is secured by the same glue to a flexible back which is pressed thereon.

When these books emerge from the binder, the glue which is applied hot has not had time to become set, and the present machine for pressing these books is intended to thoroughly press and mold them for a short interval after leaving the binding machine so as to hold them accurately in proper shape during the time when the glue is setting.

These and other objects, as will herein-after appear, are accomplished by this invention which is fully described in the following specification and shown in the accompanying drawings, in which—

Figure 1 is a partial side elevation of a machine embodying the present invention;

Fig. 2 is a top plan view of the same showing the relation of this machine to the packer;

Fig. 3 is a partially enlarged section on the line 3—3 of Fig. 2;

Fig. 4 is a partially enlarged detail of the chain links and plates carried thereby;

Fig. 5 is a partially enlarged section on the line 5—5 of Fig. 1; and

Fig. 6 is a section on the line 6—6 of Fig. 5.

The embodiment illustrated comprises a book pressing machine A shown in Fig. 1 as receiving a book B from a book binder C. Figs. 2 and 3 show the machine A for pressing books and delivering them to a well known form of packer D by means of a plunger or pusher E.

The book pressing machine A consists essentially of two inner chains 10 which mesh with sprockets 11 and 12, these sprockets being journaled in bearings 13 which are supported in any suitable manner from the main frame of the machine. Each sprocket is double-ended, as shown in Fig. 5, and has a

longitudinal opening axially therethrough, which is tapered at its ends to receive a tapered portion 14 of the shafts 15 and 15^a of the sprockets 16 and 17. The meeting ends of the shafts 15 and 15^a are provided with dental clutch teeth 18, as shown in Fig. 6, and the two portions are secured together by means of a cap screw 19. The shaft 15^a is provided with an extension 15^b by means of which it is driven from any suitable source of power in timed relation to the feeding of the book binder C.

The sprockets 16 and 17 carry sprocket chains 20 which lie outside the sprocket chains 10. The chains 20 have links with inwardly extending ears 21 to which are secured plates 22. Similarly formed plates 23 are secured to the chains 10. It will thus be seen that by loosening the screw 19 the sprockets 11 and 12 may be moved with respect to the sprockets 16 and 17 so as to vary the distance between the plates 22 and 23. To assist in this operation, I have provided openings 11^a and 16^a in the sprockets 11 and 16, respectively, so that a small pinch bar or the like may be inserted for greater ease and accuracy in moving these sprockets with respect to each other for the purpose of adjustment.

The book pressing machine A is timed with respect to the book binder C, so that each book B is released from the binder C by means of a cam 24 over which rides a cam follower 25 of a plunger 26, which thereby forces a gripper 27 outwardly, thus releasing the book B which then falls to the dotted line position B' in the machine A. At this time the plates 22 and 23 are separated, as shown on each side of the dotted line position B' owing to the fact that the plates are held apart because of the curvature of the chain in passing around the sprocket. The upper portion of the chain moves to the right, as indicated by the arrows in Fig. 1, so that the two chains 10 and 20 become straightened. The book now in the position B² is held and pressed by the plates 22 and 23, and this pressing continues until the books are discharged from the machine as will now be described.

The discharging mechanism, as shown in Figs. 2 and 3, consists of a plunger 28 which reciprocates once for each four books carried by the plates 22 and 23 and has four fingers 29 which simultaneously move four books B³ to the dotted line position B⁴ where they fall upon and are caught by a tilted rack 30 of the packer D. A plunger 31 reciprocating in timed relation to the plunger 28 then forces the four books B⁴ forward to the position B⁵ where they are caught and held by a wire retainer finger 32.

As the books B⁴ are thus pushed forward by the plunger 31 to the position B⁵, the books already held under the finger 32 are pushed forward. The operator then removes the books from the far end of this pile of books which is not shown, or they may be disposed of in any other manner.

It is necessary that the plunger 28 be moved forward with the hooks B³ while these books are being forced from between the plates 22 and 23, thereby necessitating that the plunger 28 having a diagonal motion. This is accomplished by providing a cam roller 33 which is journaled upon a pin 34 on the bottom side of the plunger 28. This cam roller follows a cam groove 35, 36, 37 in a plate 38 suitably mounted upon standards 39. The plunger 28 is moved forward by means of a cam 40 on a shaft 41 which is driven in timed relation to the shaft 15^b of the pressing machine A and makes one revolution for each four books.

The cam 40 acts through a cam follower 42 to move a lever 43 which is fulcrumed at 44 from the full line position of Fig. 3 to the dotted line position. In doing so, the cam roller 33 follows the diagonal groove 35 which is so formed that the plunger fingers 29 press directly against the ends of the books B³ but travel along with them. At the end of the stroke the cam roller 33 is caused to follow the return cam groove 36, and thence back to the groove 37 to the starting point by means of spring operated mechanism which will now be described.

The operating lever 43, together with the plunger 28, is also returned to the full line starting position by means of a spring 45. A cam roller 46 is mounted upon a pin 47 on the upper side of the plunger 28 and engages a straight cam groove 48 in a bar 49 which is provided with a central pivot 50 slidably mounted in a transverse slot 51 in a transverse member 52 carried by the plate 36. The bar 47 is normally held in the position shown at the right hand end against a stop 53 and the left hand end is held almost in contact with a stop 54 by means of springs 55 and 56.

As the plunger 28 is pushed forward from the full line position shown, the cam roller 46 rides up along the groove 48, thereby tensioning the spring 56 and ensuring that the

cam roller 33 will travel back along the cam groove 36. As the left end (Fig. 3) of the cam groove 36 is approached on the return stroke, the spring 55 is placed in tension, thereby causing the cam roller 33 to travel back along the cam groove 37 to the starting position shown. The plunger 28 is extended beyond the paper at the left and guided to maintain substantial parallelism.

It will be seen that a simple and efficient means is provided for holding and pressing the books as they emerge from the binder C, thereby ensuring that these books are firmly held so as to enable the glue to come more intimately into contact with the leaves of the book and also with the cover. This pressing also gives the book a more regular and compact form and even this short interval enables the glue to cool and set somewhat so as to provide a stronger and firmer book than would otherwise be obtained.

While I have shown and described but a single embodiment of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made which do not depart from the spirit and scope of the invention as covered by the appended claims.

I claim:

1. A machine for pressing books comprising a plurality of sprocket wheels, sprocket chains operably connecting said sprocket wheels, plates carried by said chains whereby objects to be held may be inserted between adjacent plates while the latter are separated in passing around a sprocket, the plates serving to press upon the object when the chains reach the straight portion between the sprockets, alternate plates being carried on separate chains and sprocket wheels, and one set of chains and sprocket wheels being adjustable with respect to the other set to vary the distance between adjacent plates.

2. A machine for pressing books comprising four sprockets aligned axially in pairs, two chains operably connecting said pairs of sprockets, a second set of four sprockets axially aligned with the first two sets of sprockets, two sprocket chains operably connecting the second set of sprockets, and plates carried by the last-mentioned sprocket chains and spaced from the first-mentioned plates to hold and press a book or other object therebetween.

3. A machine for pressing books comprising four sprockets aligned axially in pairs, two chains operably connecting said pairs of sprockets, a second set of four sprockets axially aligned with the first two sets of sprockets, two sprocket chains operably connecting the second set of sprockets, and plates carried by the last-mentioned sprocket chains and spaced from the first-mentioned plates to hold and press a book or other object there-

between, the second set of sprocket wheels being adjustable with respect to the first set to vary the spacing between the plates.

5 4. A machine for pressing books comprising two sets of four sprockets each, each set having two sprockets mounted upon a hollow hub which is journaled in bearings, the outer sprockets having hubs extending into said hollow hub, and means for securing said four sprockets together.

10 5. A machine for pressing books comprising two sets of four sprockets each, each set having two sprockets mounted upon a hollow hub which is journaled in bearings, the outer sprockets having hubs extending into said hollow hub, means for preventing relative rotation of the outer sprockets of each set relative to each other, and means for securing said four sprockets together.

20 6. A machine for pressing books comprising two sets of four sprockets each, each set having two sprockets mounted upon a hollow hub which is journaled in bearings, the outer sprockets having hubs extending into said hollow hub, means for preventing relative rotation of the outer sprockets of each set relative to each other, and a cap-screw for securing the outer sprocket wheels to each other and to the inner sprocket wheels.

25 30 In testimony whereof, I have hereunto set my hand this 20th day of October, 1928.

PHILIP A. FRAZIER.