March 17, 1925. 1,530,292

J. A. BIETZ

BOOK COVER SIZING MACHINE

Filed March 31, 1923 3 Sheets-Sheet 1

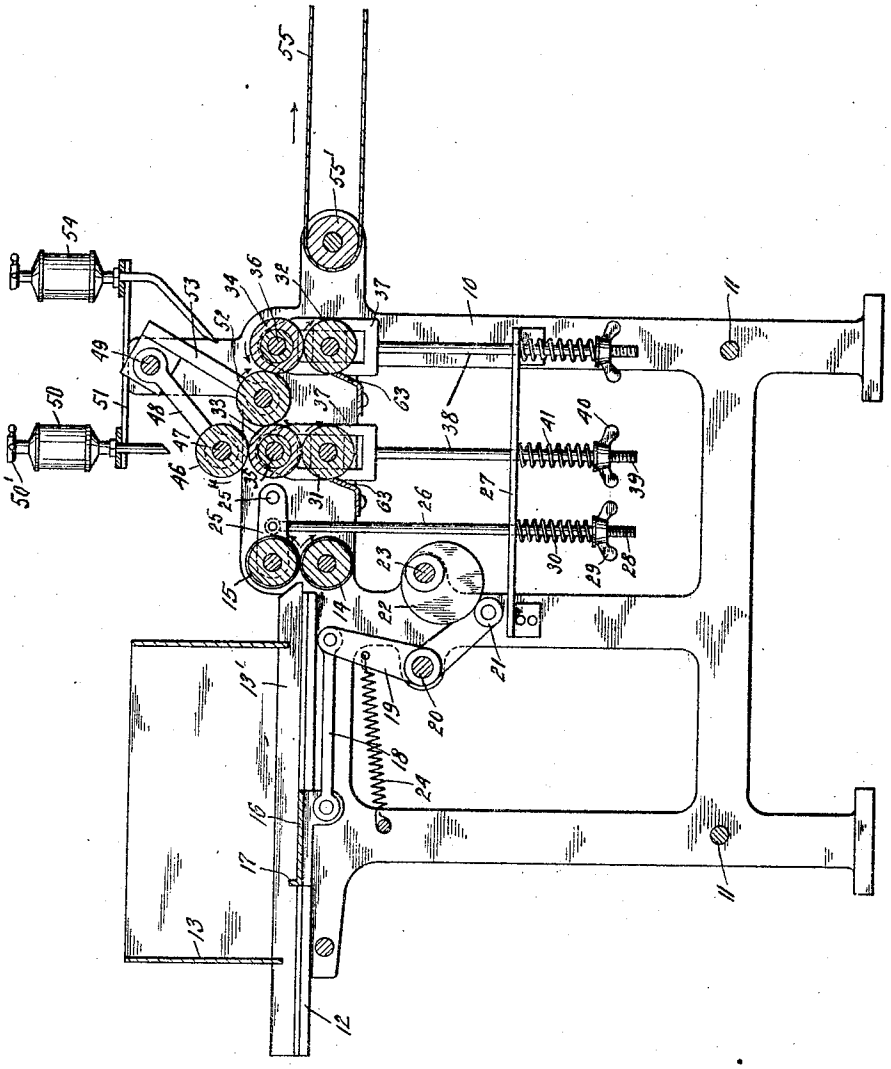


Fig. 1.

INVENTOR
John A. Bietz
BY Sigmund Hayes
ATTORNEY

March 17, 1925. 1,530,292

J. A. BIETZ

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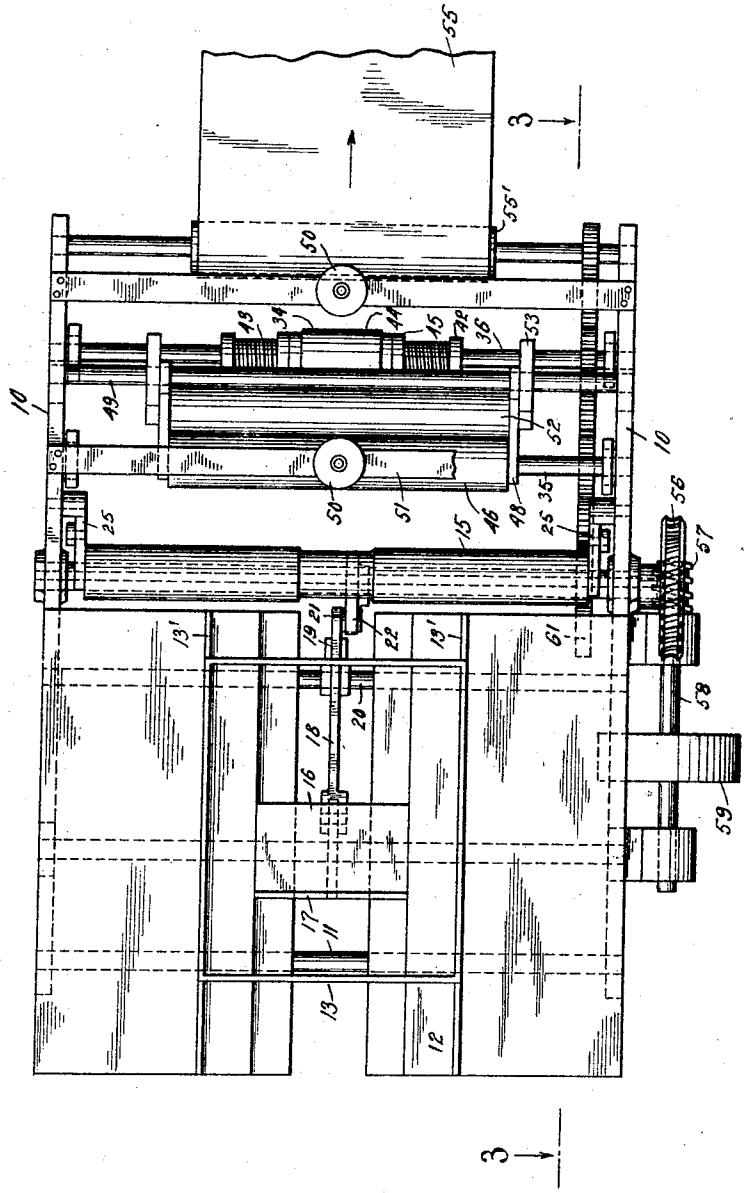


Fig. 2.

INVENTOR

John A. Bietz

BY Sigmund Herzog

ATTORNEY

March 17, 1925.

1,530,292

J. A. BIETZ

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Fig. 3.

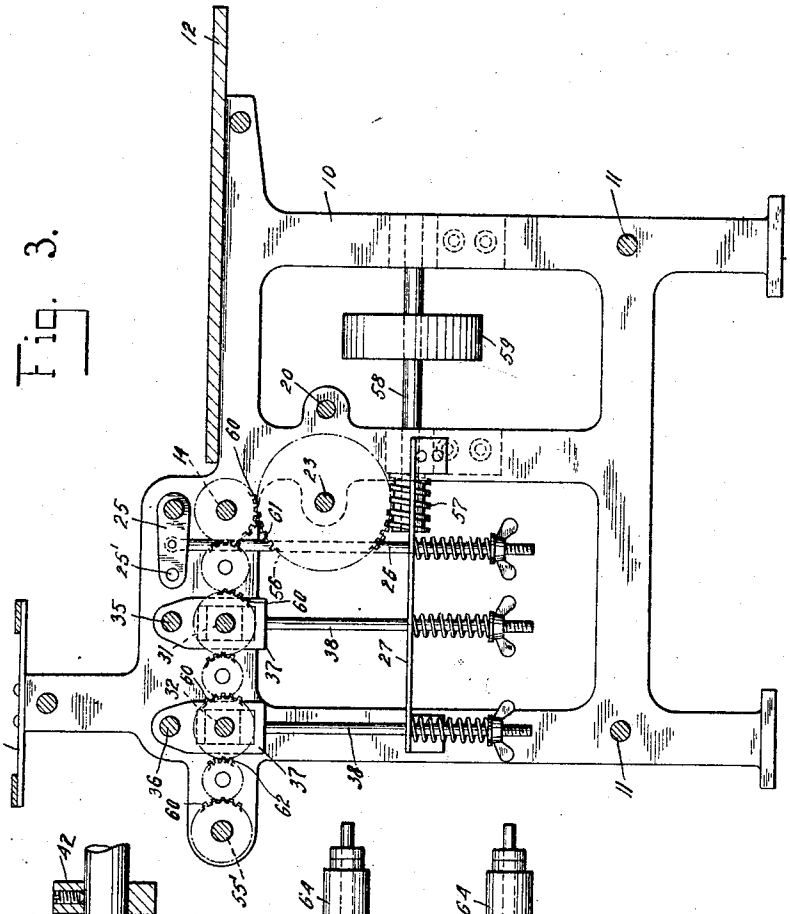


Fig. 4.

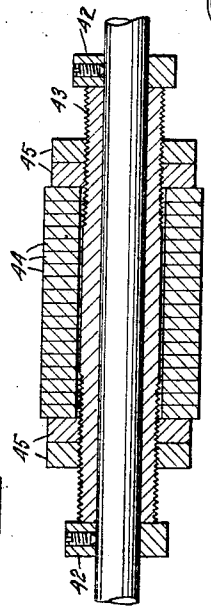


Fig. 5.

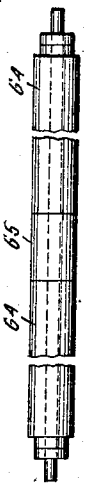
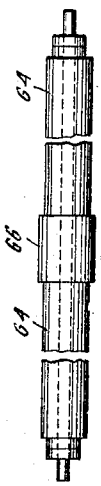


Fig. 6.



INVENTOR

John A. Bietz.

BY

Sigmund Herzog

ATTORNEY

Patented Mar. 17, 1925. 1,530,292

UNITED STATES PATENT OFFICE.

JOHN A. BIETZ, OF MASPETH, NEW YORK.

BOOK-COVER-SIZING MACHINE.

Application filed March 31, 1923. Serial No. 629,176.

To all whom it may concern:

Be it known that I, JOHN A. BIETZ, a citizen of the United States, and resident of Maspeth, in the county of Queens and State of New York, have invented certain new and useful Improvements in Book-Cover-Sizing Machines, of which the following is a specification.

The present invention relates to improvements in book-cover sizing machines, that is to say to machines for applying a paste or glue wash to bindings before gilding.

The main object of the invention is to provide a machine of the type mentioned which is entirely automatic in its operation, the only manual labor necessary being to place a stack of the book-covers to be sized in operative relation to feeding device of the machine.

Another object of the invention is to produce a sizing machine which is simple in construction, efficient in operation and which is capable of operating on book-covers of various sizes.

A further object of the invention is to produce a sizing machine capable of applying size to the back portions alone of the covers, or to the back portions and one of the sides thereof by a simple change of certain of the operating elements of the machine.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figures 1 is a longitudinal central section taken through a machine constructed in accordance with the present invention; Fig. 2 is a top plan view thereof; Fig. 3 is a section taken on line 3—3 of Fig. 2; Fig. 4 is a front elevation, on a larger scale, of one of the size applying rollers of the machine; Fig. 5 is a front elevation of a roller co-operating with the roller shown in Fig. 4 for applying sizing to the back portions of book-covers; and Fig. 6 is a similar elevation of a roller cooperating with the one shown in Fig. 4 for applying sizing to the back portions and one of the sides of the book-covers.

In the drawings, the numeral 10 indicates the two vertical side frames of the machine, connected by horizontally extending tie rods 11. On these side frames is mounted a table 12, from which rises a cage 13, into which a stack of book-covers may be placed, longitudinal guides 13′ on the table serving to guide the movement of the covers to the size applying mechanism. These guides are, preferably, adjustable, and so is also the cage, to accommodate various sizes of book-covers. The adjusting means has not been shown, as the same does not form part of the present invention.

The covers are forwarded, one after another, to a pair of feeding rollers, denoted by the numerals 14 and 15, by a feeding mechanism, which includes a slide 16, provided upon its rear with an upwardly extending projection 17, the latter engaging the lowermost of the stack of covers. This slide is connected by a link 18 with a bell crank lever 19, said lever being oscillatably mounted upon a transversely extending horizontal bar 20, that is fixed to the side frames 10. The free end of the bell crank lever carries an anti-friction roller 21, for co-operation with a cam 22 upon a shaft 23, which is rotatably mounted in the side frames of the machine, it receiving motion by means hereinafter to be described. A spring 24, fixed to the bell crank lever 19 and to a stationary part of the machine, serves to keep the anti-friction roller 21 in continuous contact with the cam 22.

The feeding rollers 14 and 15 are, preferably, made of metal, the lower roller, denoted by the numeral 14, being journaled in the side frames 10, while the upper roller, denoted by the numeral 15, is carried by arms 25, which are fulcrumed at 25′ to the side frames 10. To each of these arms is attached a vertically extending rod 26, which extends through a bridge piece 27 on the respective side frame 10. The free ends of the rods 26 are screw-threaded as shown at 28, the threads being in mesh with wing-nuts 29. Against these nuts and the bridge pieces 27 bear springs 30, coiled on

each rod 26, to hold the rollers 15 under tension. The wing-nuts 29 serve to vary the tension. The book-covers are advanced, as above described, to the feeding rollers 14 and 15, which, in turn, forward them to supporting rollers 31 and 32. These rollers are spaced apart, as clearly shown in Figs. 1 and 3 of the drawings, their journals being rotatably mounted in bearings on the side frames 10. With the rollers 31 and 32 co-operate size-applying rollers 33 and 34, respectively, which are rotatably mounted on shafts 35 and 36, respectively. The shafts 35 and 36 are journaled in slides 37, each slide carrying a vertically extending rod 38, extending through the bridge piece 27. The free ends of these rods are screw-threaded, as shown at 39, the threads being in mesh with wing-nuts 40. Between each nut and the bridge piece is disposed a spring 41, coiled on the respective rod 38. By adjusting the tension of the springs 41, the tension of the respective size-applying rollers relative to the supporting rollers 31 and 32 may be varied according to requirements.

Each size-applying roller comprises a shaft, as above stated, on which is held by stop rings 42 (Fig. 4) an externally screw-threaded sleeve 43, the sleeve being rotatable on the shaft. Over this sleeve are drawn washers 44, preferably of felt, the same being held in position by nuts 45, the threads of which are in mesh with the external threads of the sleeve 43. These washers extend through a width on the sleeve 43, which corresponds either to the width of the back of the book-cover or to the back and one side of the book-cover, depending on the part or parts to be sized.

With the size-applying roller 33 co-operates a distributing roller 46, made of felt or the like, the roller being rotatably mounted on a shaft 47, that is carried by arms 48, said arms being immovably mounted on a transverse tie rod 49, connecting the side frames 10. The size is fed to the distributing roller 46 by gravity from a receptacle 50, which is mounted upon a frame member 51, the receptacle being, for instance, in the form of an oil cup and provided with a mechanism 50′ for regulating the discharge of the size from the receptacle onto the distributing roller 46. A second distributing roller, denoted by the numeral 52, is mounted upon arms 53, the latter being carried by the tie rod 49. This roller contacts with the feed rollers 33 and 34. A second receptacle 54, on the frame member 51, discharges size onto the feed roller 34.

When a book-cover has passed between the supporting roller 32 and feed roller 34, it is brought onto a conveyor 55, for instance a belt conveyor, on which it is carried for a considerable distance, giving the size a chance to partially dry before the book-covers are again stacked, to be brought to the gilding device.

The shaft 23, which constitutes the main driving shaft of the machine, has mounted thereon a worm gear 56, in mesh with a worm 57 on a shaft 58. The last-mentioned shaft is mounted in bearings on one of the side frames 10 and is provided with a pulley 59, driven by means of a belt from any suitable source of power. The shafts of the feed roller 14, supporting rollers 31 and 32 and a roller 55′, associated with the belt conveyor, each carry a pinion 60. The pinion of the feeding roller 14 meshes with a gear 61 on the main driving shaft 23, intermediate pinions 62 gearing the pinions on the above-mentioned shafts so that the feeding roller 14, supporting rollers 31 and 32 and the roller 55′ are driven at the same speed and in the same direction. The upper feeding roller 15, the size-applying rollers 33 and 34, and the distributing rollers 46 and 52 are driven by friction. The several rollers rotate in the direction of the arrows shown adjacent the same in Fig. 1 of the drawings.

The operation of this machine is as follows: A stack of book-covers is placed into the cage 13 with the face to be sized upwards. As the shaft 58 is rotated, the slide 16 is moved to and fro the feeding rollers 14 and 15, whereby the lowermost of the stack of book-covers is brought to the feeding rollers, it being advanced by the latter to the supporting rollers 31 and 32, with which co-operate the size-applying rollers 33 and 34. The size is fed onto the distributing roller 46 and the size-applying roller 34. The distributing roller 46, being in contact with the size-applying roller 33, spreads the paste over the entire felt surface of the latter, the size being thus applied to the book-cover. The size on the feeding roller 34 is spread by the distributing roller 52 over the felt surface of the former before the said felt surface comes into contact with the book-cover. After the size has been applied to the cover, it is forwarded to the conveyor 55, traveling on the latter in the direction of the arrow shown adjacent the same in Fig. 1 of the drawings.

Should either one of the supporting rollers 31 and 32 be coated with size, in case the machine is running without a cover being advanced by the feeding rollers, the size is removed from the rollers 31 and 32 by scrapers 63, which are carried by the side frames 10. In this manner the underfaces of the covers are prevented from receiving size.

As shown in Fig. 5 of the drawings, the supporting rollers 31 and 32 are each made of several sections, more particularly two outer sections 64 and a central section 65. These sections are of the same diameter,

when the back of a cover is to be sized, but the central section is of a larger diameter as shown at 66 in Fig. 6, in case the back and one of the sides of a cover is to be sized. In this case, it becomes necessary to elevate somewhat the cover back, so as to bring the several sections of the cover into the same plane.

In Fig. 4 of the drawings one of the size-applying rollers is shown as used for sizing book-cover backs of a particular width. If covers of smaller or larger width are to be sized, obviously the number of felt washers 44 must be reduced or increased accordingly. On the other hand, if one of the sides of the book-cover and the back is to be sized, a still larger number of felt washers will have to be mounted on the sleeve 43, or even a longer sleeve will have to be used. The felt surface of the distributing rollers 46 and 52 may be of a width corresponding to the width of the felt surface on the paste-applying rollers, or it may be larger if desired.

What I claim is:—

1. A book-cover sizing machine, comprising two continuously driven supporting rollers, a spring-pressed size-applying roller co-operating with each supporting roller capable of moving toward and away from said supporting roller, a distributing roller co-operating with each size-applying roller, and a feeding mechanism for advancing the book-covers to one of said supporting rollers and the size-applying roller co-operating therewith, said supporting rollers including each a section having a diameter larger than that of the remainder thereof, thereby bringing the several sections of the book-cover into the same plane.

2. A book-cover sizing machine according to claim 1, comprising a scraper co-operating with each of said supporting rollers.

Signed at New York, in the county of New York and State of New York, this 29th day of March, A. D. 1923.

JOHN A. BIETZ.