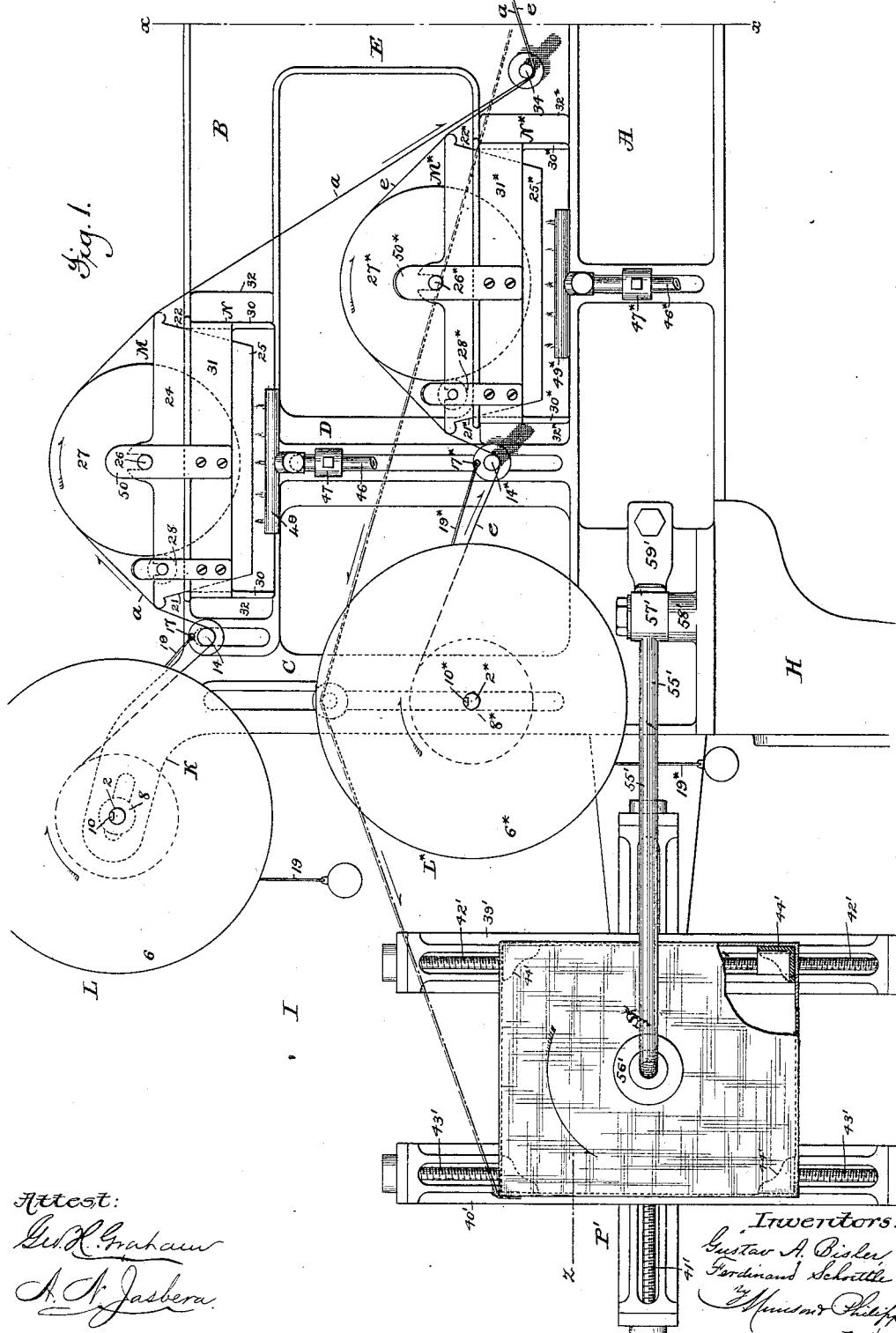


G. A. BISLER & F. SCHOETTLE.
MACHINE FOR COVERING BOXES.

No. 344,155.

Patented June 22, 1886.



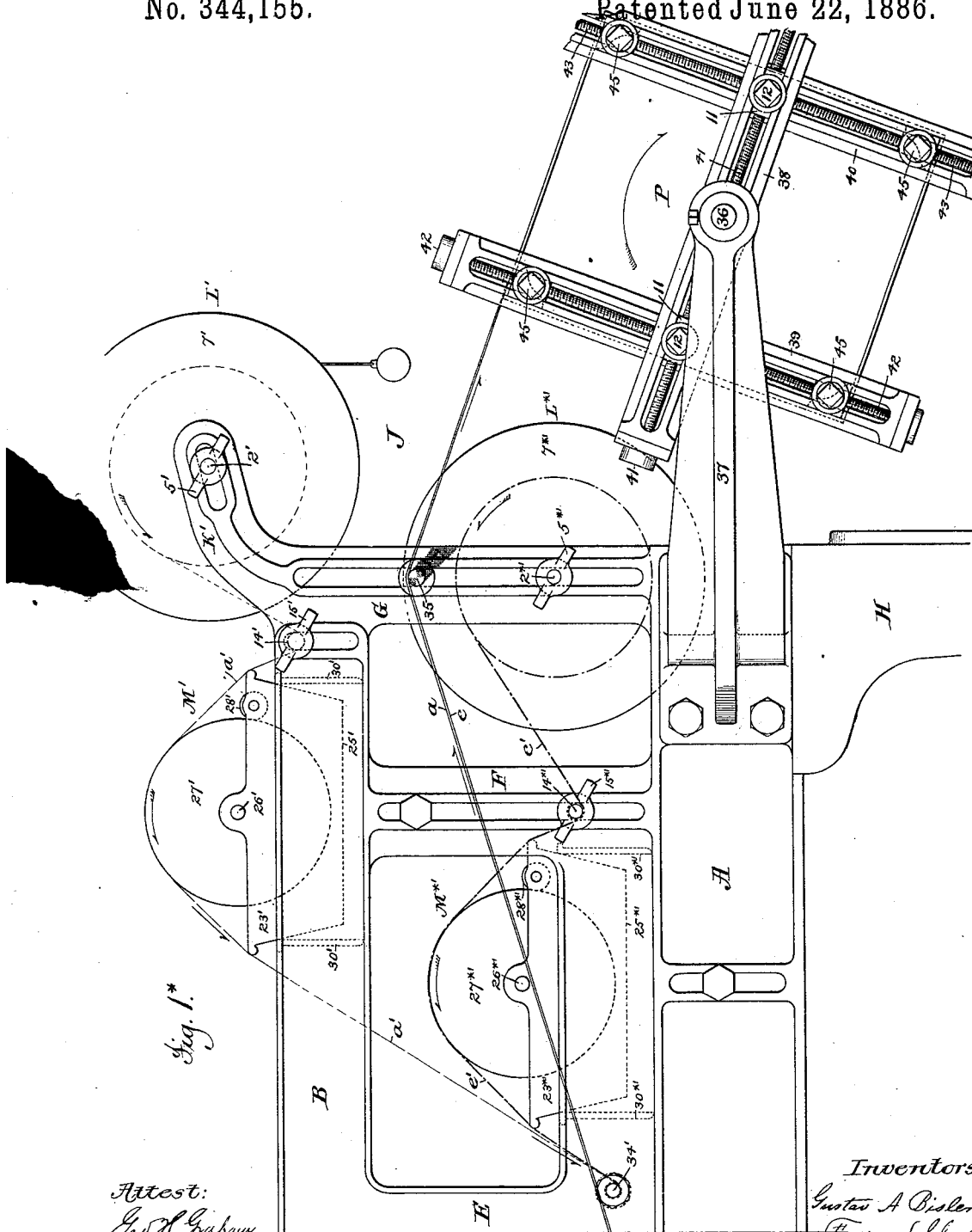
(No Model.)

6 Sheets—Sheet 2.

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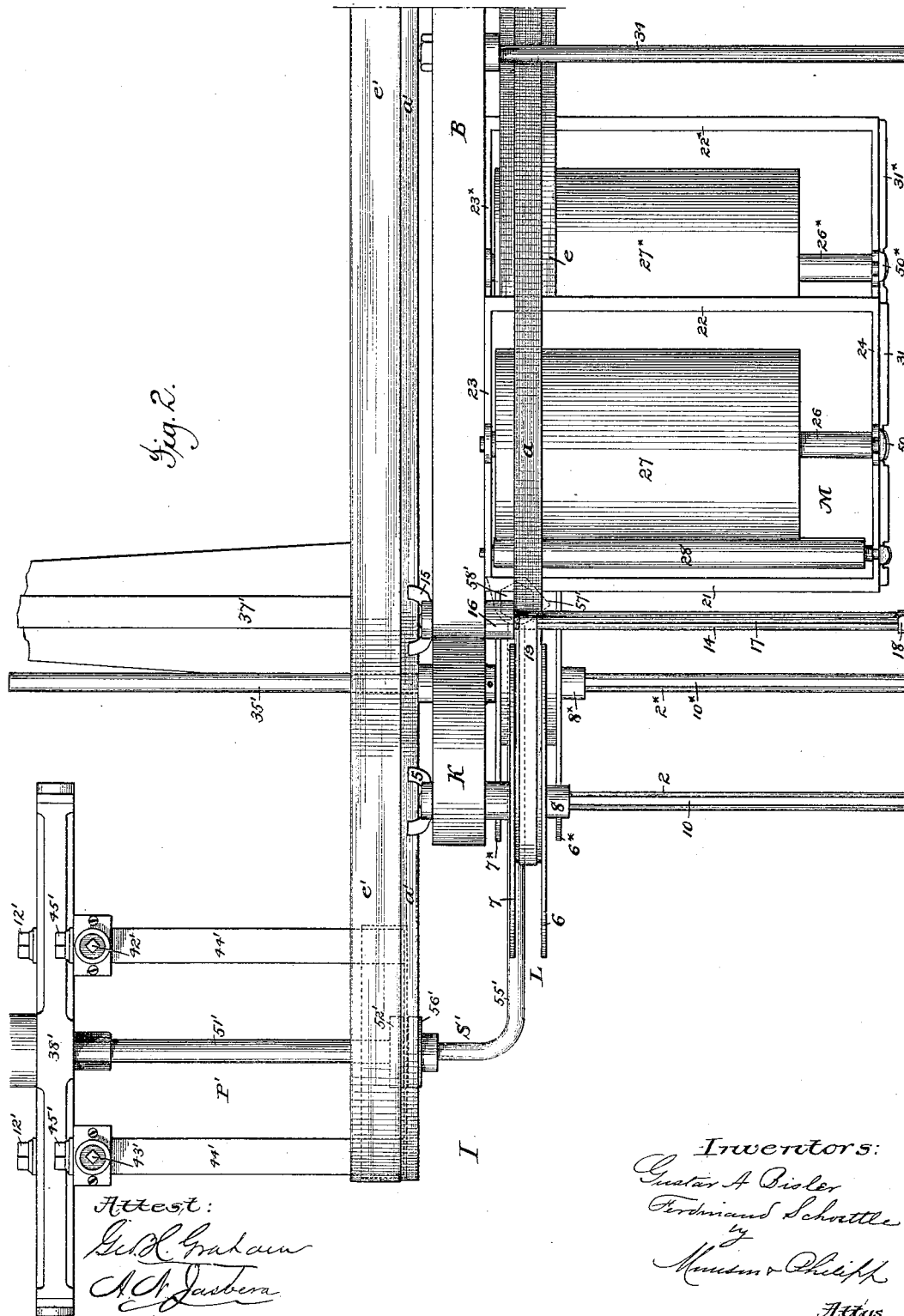
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6 Sheets—Sheet 3.

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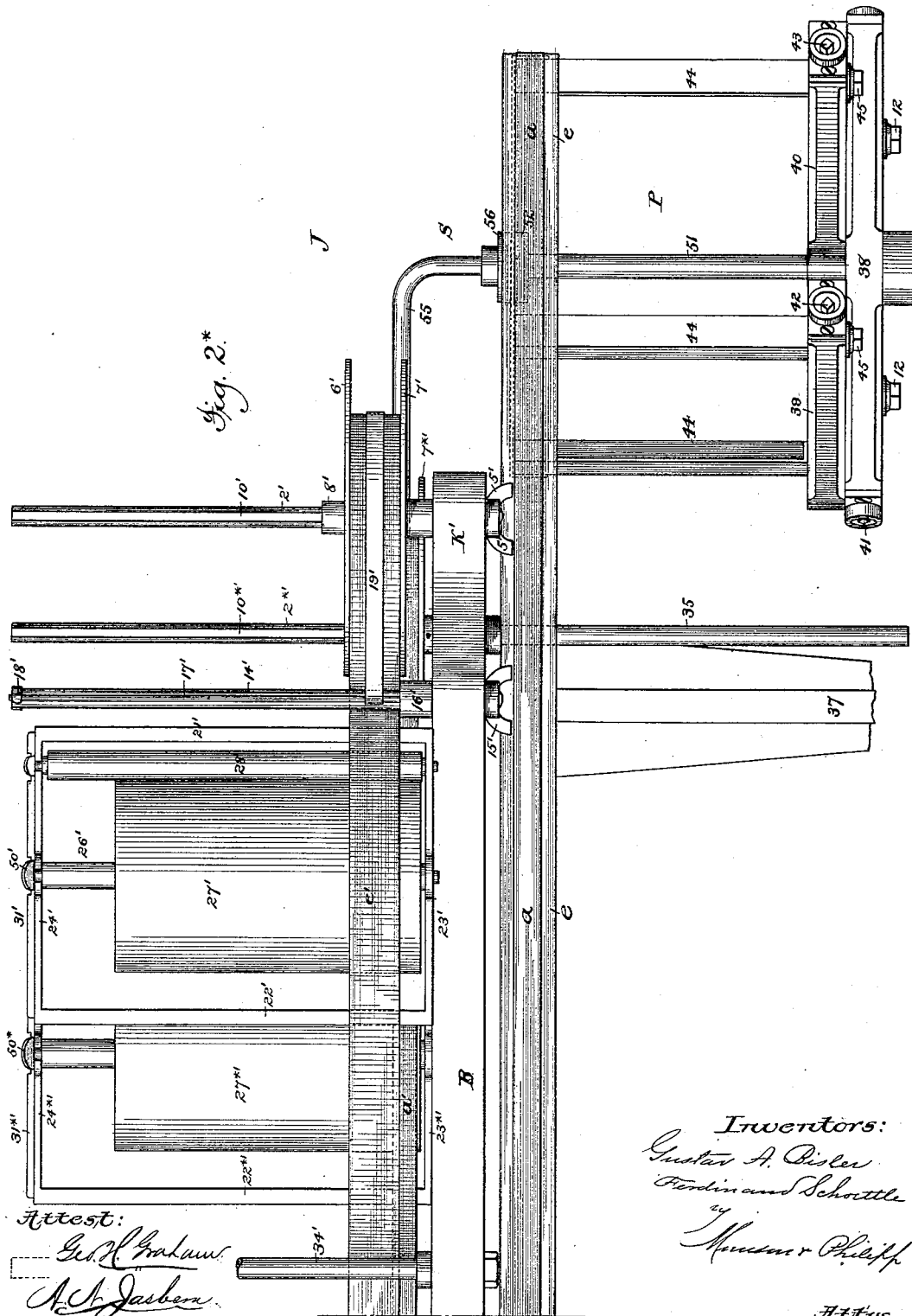
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6 Sheets—Sheet 4.

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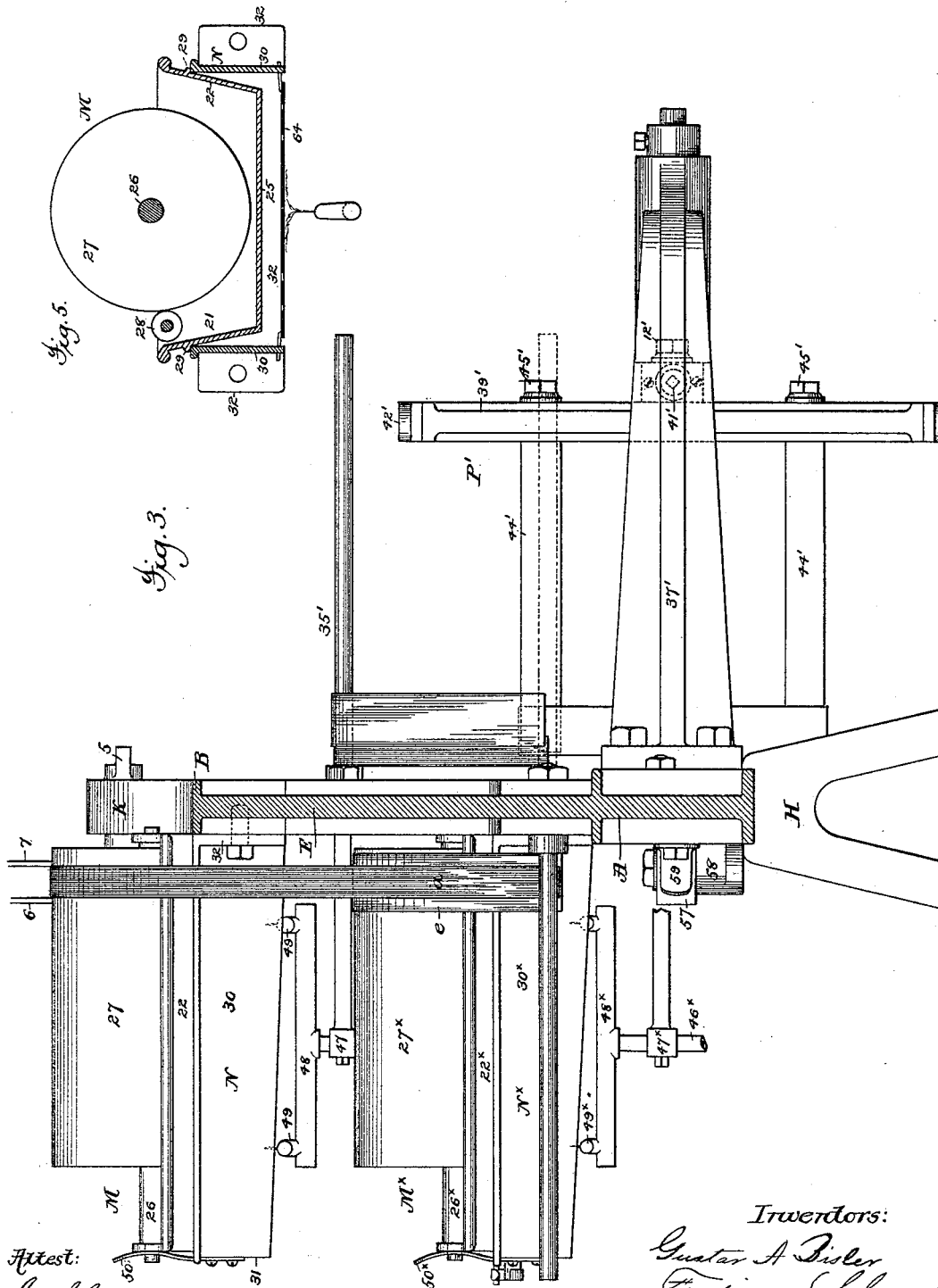
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6 Sheets—Sheet 5.

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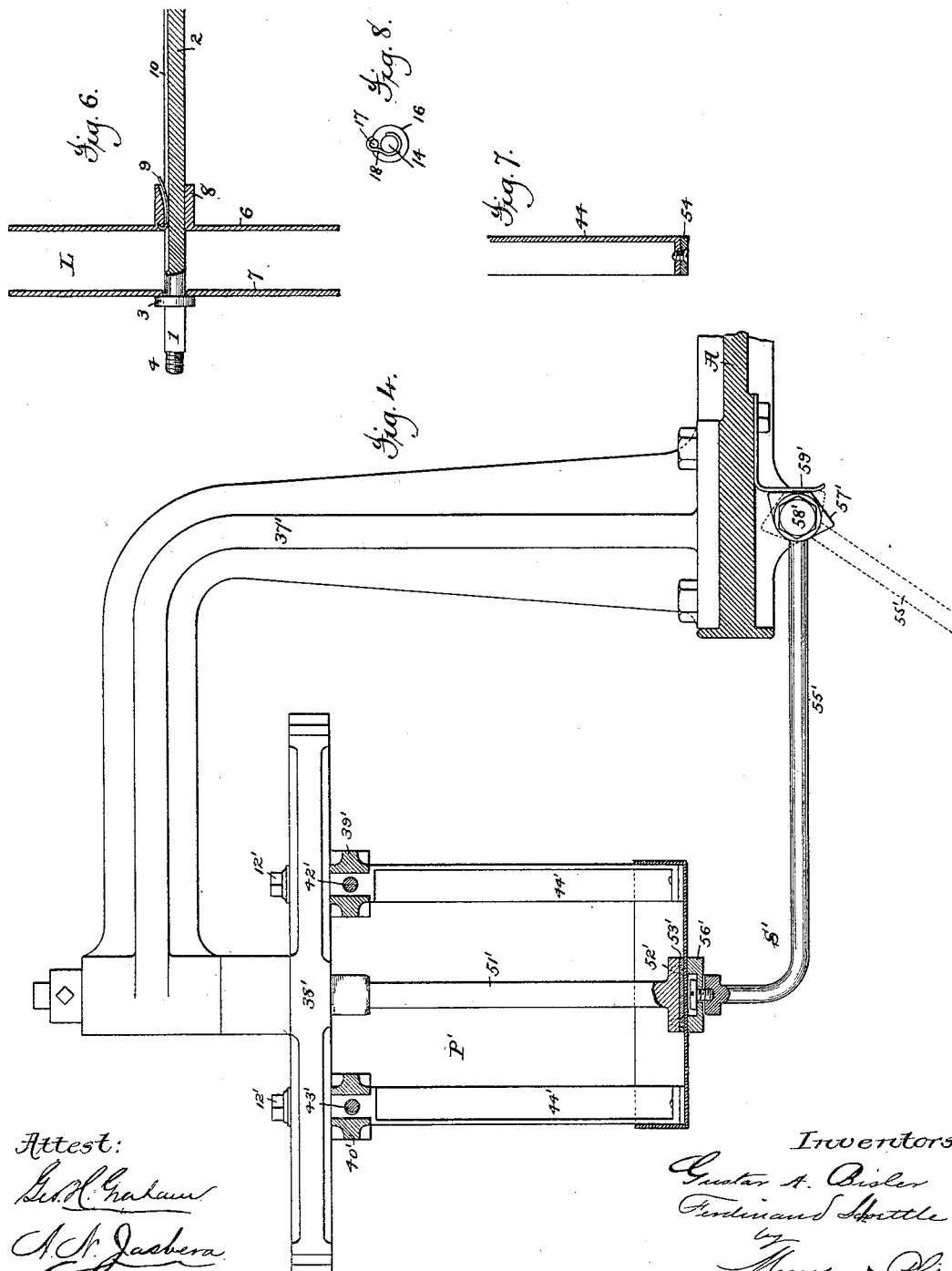
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Patented June 22, 1886.



UNITED STATES PATENT OFFICE.

GUSTAV A. BISLER AND FERDINAND SCHOETTLE, OF PHILADELPHIA, PA.

MACHINE FOR COVERING BOXES.

SPECIFICATION forming part of Letters Patent No. 344,155, dated June 22, 1886.

Application filed April 17, 1884. Serial No. 128,250. (No model.)

To all whom it may concern:

Be it known that we, GUSTAV A. BISLER and FERDINAND SCHOETTLE, citizens of the United States, residing in the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have jointly invented certain new and useful Improvements in Machines for Covering Boxes, fully described and represented in the following specification, and the accompanying drawings, forming a part of the same.

In said drawings, Figures 1 and 1* respectively represent in side elevation the left and right hand portions of one side of the machine, and when taken together constitute an entire side elevation of the machine. Figs. 2 and 2* are similar plan or top views. Fig. 3 is a vertical sectional elevation taken on the line x of Fig. 1, looking toward the left. Fig. 4 is a horizontal sectional view of the left-hand portion of the machine, taken on the line z of Fig. 1. Fig. 5 is a transverse vertical sectional elevation of the gluing apparatus, showing one mode of heating the same. Fig. 6 is a longitudinal sectional elevation of a paper-reel. Fig. 7 is a longitudinal section of one of the bearers of the box-holder. Fig. 8 is an end elevation of a paper guide-rod.

The improvements effected by this invention relate to that class of machines which are designed to facilitate the operation of attaching the paper coverings or ornamental facings to boxes.

The invention comprehends the following: an improved reel for supporting the strips or webs of covering material, an improved tension device therefor, an improved construction of guide-rods for the strips or webs of material, an improved construction of glue-applying apparatus, an improved construction of box-holder, an improved box-retainer, and an improved construction of supporting frame-work whereby duplex parts are maintained from the same frame.

The invention also embraces many combinations of parts, all of which subjects-matter are fully hereinafter described and claimed.

In this class of machines the object to be attained is the convenient and rapid application of the covering material to boxes, the foundation bodies of which are principally

composed of pasteboard. In the cheaper class of such boxes it is common to cover their exteriors with cheap or a plain paper, and in such cases it is only necessary to use one web or strip of a width equal to the depth of the sides of the box or cover to be covered plus the necessary lapping or binding edges; but where the box is to have an ornamental character it is usual to apply to the corners or edges, or both, of the box-sides a material that is highly ornamental, and this necessitates the use of two and sometimes three strips of the covering material. In other instances it is common to provide a binding or strengthening web or strip that shall underlie a material of more costly character, and thus provide for the ornamental material or the weak body of the box a suitable strengthening-strip.

By the aid of the machine hereinafter described one or more such ornamental or strengthening strips of material may be provided in rolls consisting of long webs or ribbons, which, in passing through the machine, will be provided with an adhesive substance upon proper surfaces, and hence be adapted for attachment directly to the box, while said box is mounted upon a holder that is capacitated to be rotated by hand, and which will thus operate to wind the covering strips or webs upon it under such tension as will cause the covering to lie smoothly thereon, and thus produce a smooth and perfect adherence of the said covering to the box-body.

The frame-work of this machine is of such construction that it supports duplicate mechanisms from its opposite sides. Its lower member, A, upper member, B, and connecting uprights C, D, E, F, and G are made in one casting that is supported by appropriate legs, H. This casting may thus have all of its bearings on either side dressed by one planing operation, and hence the bearings on each side will be aligned and true, so that when the parts to be supported by said frame are attached thereto they will project therefrom at true right angles and have perfect parallelism with each other, whereby they are adapted to operate in succession upon strips or webs of material without distorting the same or interfering with an even onward travel throughout the machine.

This feature is an important one in a machine of this character where many supporting attachments are provided to work upon material that passes from one to the other, and hence require, particularly where the parts rotate, axes that are truly parallel; and this is especially true where the material operated upon is a web, strip, or ribbon, or material the straight onward movement of which will be seriously interfered with if such parallelism is not secured and maintained. Such a single frame also has the characteristic advantage in this class of machines of avoiding the expense of double frame-work, while it enables duplicate mechanisms to be attached to its opposite sides, which mechanisms are thus sustained, so that webs or strips of paper may be threaded laterally, a desideratum of great importance.

That the mechanisms and their operation may be readily understood one complete set thereof—that attached to one of the sides of the frame—will first be described, and then the corresponding set on the opposite side of said frame will be explained, so far as it may be necessary; but in such description the mechanism first described will be properly designated by letters of reference, and the corresponding mechanisms on the opposite side of the frame-work will be given like letters of reference, primed, to more clearly distinguish one set from the other, which fact should be borne in mind in considering this description.

The mechanism projecting toward the observer in Figs. 1, 1* and 2, 2* being first considered in this description, the end of the apparatus marked I in Figs. 1 and 2 will be the feeding end of the apparatus, and the end marked J in Figs. 1* and 2* the delivery end of the apparatus; but when the mechanisms projecting away from the observer or from the opposite side of the main frame are considered the feeding and delivery ends are reversed—that is, the J end is the feeding end, and the I end the delivery end.

Referring now to the mechanism shown as projecting toward the observer, the feeding end I of the machine will be found provided with an arm, K, extending from the frame, in a bearing of which arm is mounted the shaft 2 of a paper-reel, L, which shaft (see Fig. 6) is provided with a hub, 3, squared shank 1, and a threaded end, 4. The shank 1 fits the parallel sides of the bearing and the collar 3 abuts against one side of the arm K, while a thumb-nut, 5, screwed upon the thread 4, has a flange that bears upon the opposite side of the arm K, said shaft 2 being thus seated and secured firmly in the bearing.

The reel L is further composed of a disk, 7, that rests against the collar 3, and of a disk, 6, that has an elongated hub, 8, that slides upon the shaft 2, which hub is provided with a spring-spline, 9, that enters and travels in a groove, 10, in said shaft. This disk 6 may therefore be adjusted to and from the disk 7, and be maintained in any position of adjust-

ment given to it without the aid of a set-screw, as is the common mode. A reel thus constructed is adapted to receive and hold a roll of material, as paper, consisting of a web or strip of any width (not exceeding the length of the shaft 2) and to embrace the sides of said roll of paper, so as to prevent the outer layers thereof from moving laterally as the web or strip is unrolled.

In advance of the paper-reel is a vertically-adjustable guiding-arm, 14, that is provided with a hub, 16, and with a squared shank that terminates in a threaded end. This shank rests in an elongated slot in the frame, and a thumb-nut, between which and the hub 16 the frame is embraced, operates to securely hold the arm in parallelism with the shaft 10. Parallel with its upper surface this arm 14 is provided with a rod, 17, (see Fig. 8,) which rod enters at one end into the hub 16 and at the other is held in place by a yoke, 18, that embraces said arm and rod. This rod 17 is provided as a means of attachment for one end of a weighted friction-strap, 19, the office of which is to bear upon the reel of paper and create a suitable friction opposing the unwinding operation. This rod 17, being made as long as the arm 14, is thus adapted to support a strap, 19, as wide as the strip or web used, or a number of such straps, for applying friction evenly throughout the width of the web or strip. Beyond this guide-arm is a fountain, designated M, a sectional view of which is shown in Fig. 5. This fountain is composed of a reservoir formed by sides 21 22, ends 23 24, and bottom 25, within which a fountain-roller, 27, is mounted upon an axis, 26, journaled at one end in a fixed bearing in the end 23, and at the other end, 24, in an open bearing, where it is secured by a spring-holder, 50, that receives said axis; and for co-operation with said fountain-roller 27 there is provided a doctor-roll, 28, similarly mounted. This fountain is preferably constructed with inclined sides, with or without ledges 29, whereby it may rest in a supporting-box, N, that is composed of sides 30 30, an end, 31, and attaching-lugs, 32, by which said supporting-box is secured, through the medium of screw-bolts, to the frame-work, as is shown in Fig. 3. Beneath this fountain there is provided a heating apparatus consisting of a vertical main pipe, 46, that may slide adjustably in a securing-collar, 47, of a bracket projecting from and attached to the frame-work, which collar is provided with a set-screw for securing said main pipe in proper position, and of an auxiliary pipe, 48, from which extend branch pipes 49, that are provided with numerous burners, as best seen in Figs. 1 and 3. This pipe is designed to convey gas from any convenient source, and the branch pipes 49 are arranged so that the burning jets will extend so far over the area of the bottom 29 of said fountain as to distribute heat to its contents.

In Fig. 3 the heating apparatus is shown with a means for evenly distributing heat to

the fountain. It consists in providing the supporting-box N with a bottom, which is a deflecting-plate, 64, attached in any suitable manner to the sides 30. This deflecting-plate is a thin metal structure perforated to allow the heat to pass through more readily. The gas-flames projected against this plate are deflected over its surface, and thus cover the greater portion of its area, thereby quickly heating the same and maintaining an even degree of heat throughout the extent of said plate 64, and hence underneath the entire surface of the fountain. There is also provided in the upright E, at the lower end thereof, another guide-arm, 34, which, as it differs in no essential manner from the guide-arm 14, except that it is not adjustable, needs no particular description. In the upright G there is another guide-arm, 35. This arm is constructed, mounted, and adjusted in like manner as is the guide-arm 14, and therefore needs no other description.

The hubs of each of the guide-arms, as 14, 34, and 35, are of such width as to properly guide the covering-strips in their passage from the reels to and from the paste-fountains to the box-holder, and hence any lateral adjustment necessary to be given to the edge of the strip may be effected by changing the guide-arms for others having hubs of the desired width, or the same result may be accomplished by providing washers on the arms placed between the hub and the frame-work, to which the arms are held.

At the delivery end of the machine there is provided a rotating adjustable box-holder, P, the axis 36 of which is supported by a right-angular bracket-arm, 37, firmly bolted to the lower member, A, of the frame. This box-holder, in so far as it consists of adjustable arms and bearers, is not new, but as herein shown and applied embodies novel features, which will be fully explained. This box-holder is composed of a main arm, 38, fixedly secured centrally of its length with the axis 36, and of a pair of auxiliary arms, 39 40, that are arranged at right angles to and engaged with said main arm, one on either side of its axis, the butting surfaces of which arms are planed so as to afford bearings which permit the easy movement of the auxiliary arms upon the main arm, as will presently appear. Each of these arms 38 39 40 is provided with a longitudinal central guide-slot, in which are arranged screw-bolts 41 42 43, respectively. The guide-slot of the main arm 38 is entered by a square hub (not shown) on the rear face of each of the auxiliary arms 39 40, and are held therein by bolts 12, so as to constantly and firmly hold said arms to the main arm. (See Figs. 1, 2, 3, and 4.) These square hubs provide nuts which are engaged by the screw-bolt 41 of the main arm 38, which is provided with right and left hand threads on either side of its axis, by which, upon applying a socket-key to the end of the bolt, the auxiliary arms may be adjusted to

and from each other, as is apparent. It may be remarked that the clamping-screws 12 may, after each adjustment of the auxiliary arms on the main arm be tightened, so as to more fixedly secure said arms in their adjusted positions. Projecting at right angles from the arms 39 40 are bearers 44, which are preferably made of angle-iron with united ends, so as to present, as seen in Fig. 7, right-angular side and end bearings for the corners of the box to be operated upon. These arms each carry two such bearers, (they might have more, if desired,) and these bearers are each provided with hubs entering the longitudinal slots of the arms 39 40, and provide nuts that may travel on the screw-bolts 42 43, while guided in the longitudinal slots in like manner as the arms 39 40, are mounted and adjusted in the main arm 38, said bearers being prevented from wobbling or getting out of their parallel relation to each other by means of clamping-screws 45, the flanged heads of which bear upon the arms 39 40, and thus relieve said screw-bolts from strain, for the reason that their flanges form one bearing, sustaining them, while the squared end of the bearers forms another, the opposite sides of the arms 39 40 being thus embraced. Each of the screw-bolts 42 43 are also provided with right and left screw-threads on either side of their longitudinal centers, (see Fig. 1,) by which, upon applying a socket-key to the ends of the bolts, each pair of the bearers may be adjusted on the auxiliary arms to and from each other, as will be readily seen, from which adjustment it is obvious that any sized box or cover within the dimensions of the arms 38 39 40 may be held upon the bearers 44. The box-holder is provided with a central post, 51, having an enlarged head, 52, that is aligned with the ends of the bearers 44, so as to provide an even support for the end of the box, and said post has a removable lift, 53, (see Fig. 4,) and the bearers 44 have similar lifts, 54, (see Fig. 7,) which are provided for a purpose yet to be explained. For co-operation with the central post, 51, there is provided a box-retainer, S, that consists of an arm, 55, having at one end a head, 56, and at the other provided with a hub, 57, (see, also, Fig. 4, where the corresponding parts of the duplicate mechanisms are similarly marked with primed characters,) by which the arm is pivoted to a stud, 58, rising from the frame A. This hub 57 has angular faces, that form seats that rest upon a retaining-spring, 59, the resilient action of which enables the retainer S to be moved in and out of operative position, and the pressure of which spring will hold the retainer S in operative position in contact with the box or in the removed position indicated in Fig. 4 by dotted lines. This box-holder P thus constructed may be adjusted to receive various dimensions of boxes by first bringing its arms 39 40 into proper relative adjustment and then adjusting the bearers 44 more or less distant from the arm 38, which adjustments are accom-

plished by turning the screw-rods 41 42 43, which may be done by means of a wrench applied to the suitably-shaped heads of said rods. When the bearers 44 are in the proper position, they as well as the arms 39 40, may be secured fixedly by setting up the clamping-screws 12 and 45.

The bearers 44 may be given any necessary shape in transverse section to adapt them to support a circular or angular box and still retain their capacity of adjustment to boxes of various dimensions. The heads 56 of the box-retainer are secured to the arm 55 by means of attaching-screws, (see Fig. 4,) and may thus be removed and replaced by others of different dimensions, for a purpose yet to be explained.

The apparatus also includes a paper-reel, L*, beneath the reel L, a fountain, M*, beneath the fountain M, and a guide-arm, 14*, interposed between the reel L* and the reservoir M*, which arm is provided with a rod, 17*, and a weighted friction-strap, 19*. Said paper-reel, fountain, and guide-arm are constructed in like manner as are the paper-reel L, guide-arm 14, and reservoir M, and hence they need no particular description here.

One set of the mechanisms have now been described; but before proceeding to set forth their operation it may be stated that the mechanisms mounted on the opposite side of the frame-work are constructed and operate precisely in the same manner, and hence it may be observed that, as the said mechanisms on the opposite sides are marked with corresponding references, primed, they may be consulted in aid of the description of the various structures.

Each opposite set of mechanisms are independent, and hence either or both may be in operation and work upon the same or different sizes of boxes.

To put the apparatus in operative condition the fountains are charged with an appropriate quantity of glue, paste, or other adhesive or cementing composition, which is maintained at a proper condition of liquefaction and degree of temperature by a suitable adjustment of the gas-pipe 46 and its burners with respect to the bottom 25 of the fountain or the deflector 44. The box-holder P has its bearers 44 adjusted in proper position to receive a box and sustain it—say by its four corners, as in Fig. 1—said box being entered onto said bearers with its sides and ends extending toward the arm 51, when the retainer S is moved out of the way, as indicated by dotted lines, Fig. 4. When the box is in place, this retainer S is moved so that its head 56 clamps the central part of the box onto the head 52 of the central post, 51, with a pressure due to the power of the spring 59, exerted upon one shoulder of the hub 57. The reel L is supplied with a roll of paper, *a*, of a suitable width, and the end of the web or strip composing this roll is led under the guide-arm 14, thence over and in contact with the fountain-

roller 27, whereby it receives a charge of glue, properly distributed over its under surface, is thence led under the guide-arm 34, thence over the guide-arm 35, and thence it passes onward for application to the box. The reel L* is supplied with a roll of paper, *e*, of suitable width, the end of the web or strip composing which roll is led under the guide-arm 14*, thence over and in contact with the fountain-roller 27*, whereby it receives a charge of glue, properly distributed over its under surface. It thence passes under the guide-arm 34, where it is united in proper position to the web or strip *a*, so as to practically become a part thereof. It thereafter runs over the guide-arm 35, underneath the web or strip *a*, and from thence the compound paper webs or strips *a e* are led onto the box.

The webs or strips illustrated in connection with the mechanisms nearest the observer are of different widths. The web *e* is supposed to be wide enough to cover the sides of the box and project beyond the edges thereof sufficiently to provide binding-laps. The strip *a* is narrower than the box-sides are wide, and hence will only partially cover such sides, and as it laps onto the strip *e* it will consequently leave a portion of the strip *e* exposed, to form ornamental edges for the box.

The operator, having adjusted and secured a box upon the box-holder P, lays the end of the compound paper strip *a e* onto one side of the box and presses the same until it adheres thereto, then by a simple rotation of the box-holder by hand the compound covering-strip is laid onto all sides of the box. When the four sides of the box are thus covered, the compound covering-strip is severed, and while the operator holds the free end of the compound paper web by one hand with the other he throws off the retainer S by a lateral thrust, and then, removing the box, places another upon the holder, returns the retainer S, and repeats the operation.

A second operator may simultaneously cover boxes with the duplicate mechanisms on the other side of the frame. In connection with those mechanisms the compound covering web or strip is shown as composed of a wide web, *a'*, and a narrow web, *e'*. In that relation of the webs or strips the strip *a'* is of a width sufficient to cover and lap over one edge of the box to form an ornamental edge, while the overlying-strip *e'* is of a width to extend from a point near one edge over the entire body and also lap over the other edge, the box so covered exposing a plain body with one ornamental edge.

It will be observed that the hubs of the shafts of the reels and the guide-arms are of such length that their outer faces are appropriately distant from the frame to form guiding-edges properly aligned throughout the apparatus, so as to evenly guide the edges of the webs or strips of paper relatively to each other, and that said hubs have a definite relation to the ends of the bearers 44 and head 52 of the

box-holder and the head 56 of the box-retainer, whereby said webs or strips are properly directed onto the box.

When boxes made of material which forms thick bottoms are to be covered, it is necessary to perfect and expeditious work that this alignment shall be maintained, and to accomplish this shafts and guide-arms having appropriate hubs must be used, and either an appropriately thin lift, 53, be placed on the head 52, and similar lifts on the end of the bearers 44, or an appropriately thin head, 56, be placed on the arm 55.

What is claimed is—

1. In a box-covering machine wherein duplicate sets of operating mechanisms are provided, the combination, with a single central frame-work having bearings on both its faces, of mechanisms the duplicates of which are attached to opposite sides of said frame-work, and which forms the sole support for the same, substantially as described.

2. A reel for supporting a rolled web or strip of paper, consisting of a supporting-shaft having a groove, as 10, and a disk, as 6, provided with a spring-spline, 9, running in said groove, whereby said disk may be adjusted to fixed positions on said shaft, substantially as described.

3. The combination, with a paper-reel, of a guide-arm, as 14, rod 17, its holding-yoke 18, and weighted friction-strap 19, substantially as described.

4. The combination, with the fountain-roller shaft 26 and its open bearing, of one end of the spring-holder 50, having a hole to receive said shaft, substantially as described.

5. The combination, with the box-holder P, of a pivoted swinging box-retainer, S, substantially as described.

6. The combination, with a box-holder, P, upon the bearers 44 of which a box is supported to receive its covering strip or strips, of reels and guide-arms provided with hubs, the guiding-faces of which are appropriately aligned with the supporting-surface of said box-support P, substantially as described.

7. The combination, with the guide-arms for the covering web or strip, of a box-support consisting of supporting-arms 44 and a central post, 51, which arms and post are provided with the removable lifts 54 53, substantially as described.

8. The combination, with the arms 44 and post 51 of the box-holder, of the box-retainer S, substantially as described.

9. The pivoted swinging box-retainer S, provided with the loosely-pivoted head 56, substantially as described.

10. The combination, with a paper-reel and paper-guide arm having guiding-hubs for the edge of the paper, of a box-support having removable lifts 53 54, substantially as described.

11. The combination, with a paper-reel and paper-guide arms having guiding-hubs for the edge of the paper, of a box-support having removable lifts 53 54, and a box-retainer S, having interchangeable head 56, substantially as described.

12. A box-support the box-holding bearers 44 of which are provided with threaded hubs that run upon right-and-left screw-rods in the supporting-arms 39 40, substantially as described.

13. A box-support the box-holding bearers 44 of which are provided with threaded hubs that run upon right-and-left screw-rods in the supporting-arms 39 40, and which arms are provided with threaded hubs that run upon a right-and-left screw in a main supporting-arm, 38, substantially as described.

14. An organized box-covering machine consisting of box-holders for supporting the work to be covered, reels for carrying the covering material, guide-arms for directing the same, fountains and fountain-rollers for charging said materials with glue, a complete set of which devices is wholly supported on opposite sides of a single central frame-work, so that both sets are capable of independent operation, substantially as described.

15. A box-retaining device whose pivotal hub is provided with angular faces upon which a spring, 59, bears, whereby said retainer is held open or pressed closed, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

GUSTAV A. BISLER.
FERDINAND SCHOETTLE.

Witnesses:

L. C. CLEEMARR,
JOSEPH FRANKISH, Jr.