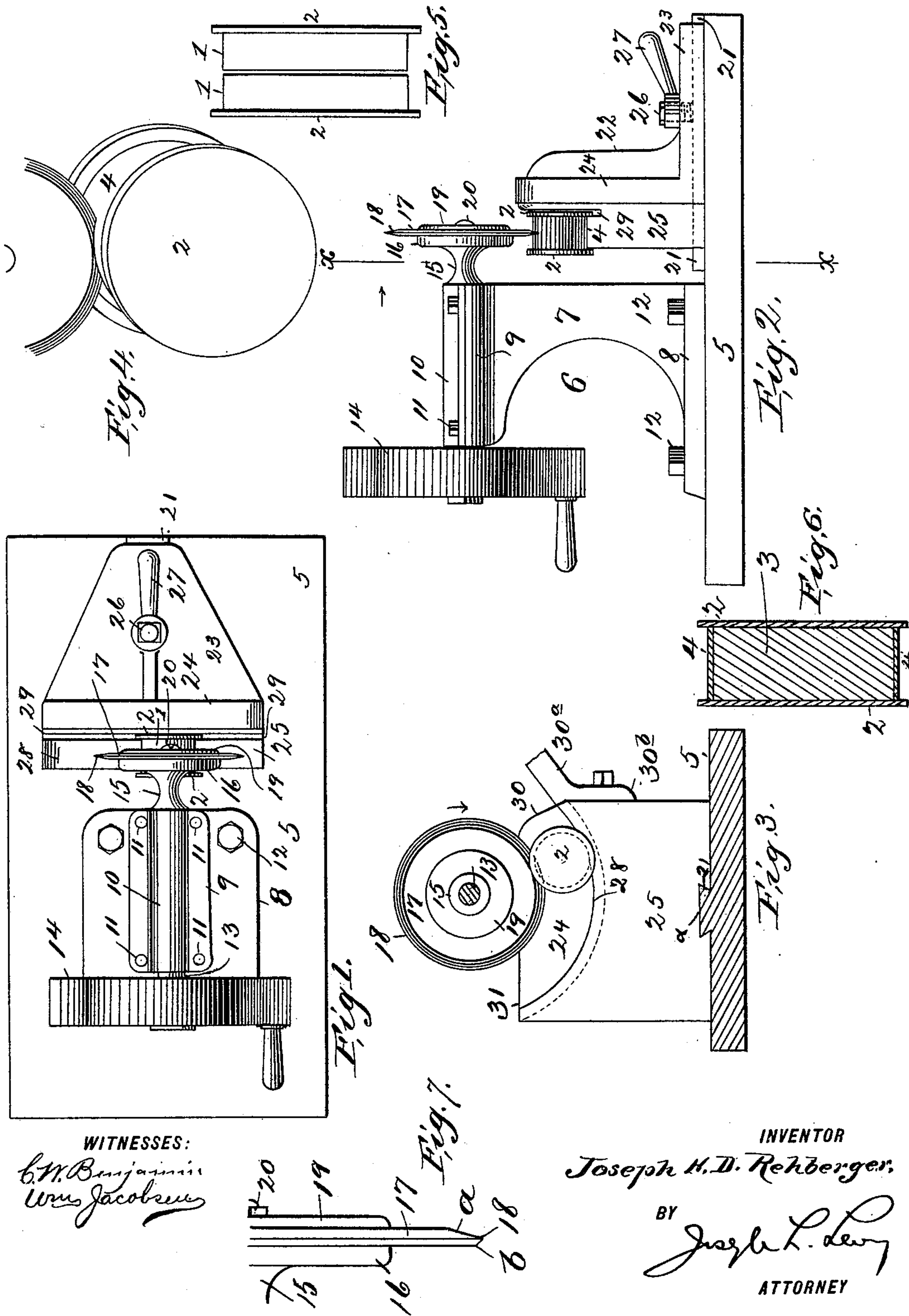


(No Model.)

J. H. D. REHBERGER.  
BOX MAKING MACHINE.

No. 582,876.

Patented May 18, 1897.





# UNITED STATES PATENT OFFICE.

JOSEPH H. D. REHBERGER, OF BROOKLYN, NEW YORK, ASSIGNOR TO  
HIMSELF AND THEODORE PILZ, OF SAME PLACE.

## BOX-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 582,876, dated May 18, 1897.

Application filed April 1, 1896. Serial No. 585,751. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. D. REHBERGER, a citizen of the United States, residing at the city of Brooklyn, county of Kings, and State of New York, have made certain new and useful Improvements in Box-Making Machines, of which the following is a specification.

My invention has reference to the manufacture of paper boxes and the like.

The practice of my invention results in a method of manufacturing a box wherein a mandrel of the shape of the box in cross-section is covered with a strip or band of paper, cardboard, or other material used in the manufacture of boxes, and end pieces secured to the strip or band previously secured upon the mandrel, and the box or dummy thus formed is then divided by severing the strip between the end pieces to form the top and bottom of the box, to which is subsequently added the interior flange, thus completing the box.

My invention therefore relates to a mechanical organization adapted to carry out the before-mentioned method; and it consists, primarily, in a suitably-mounted rotatable cutting knife or blade and a bed and restraining-guide for the support of the box during the operation of severing the band to form two halves, which bed or guide is conformed to the plane of movement of the box-dummy, which bed can either be stationary or segmentally disposed, (the curve of which will then be concentric to the curve of the cutting-knife,) or said bed may be formed of instrumentalities forming a movable support for the box.

My invention further consists in the construction and combination of parts hereinafter described, and further pointed out in the claims.

In the drawings forming part of my application, Figure 1 is a plan view of a machine embodying my invention, said machine being adapted for the manufacture of circular boxes. Fig. 2 is a side elevation of the same. Fig. 3 is a front sectional elevation taken on the line  $x x$ , Fig. 2, looking in the direction of the arrow. Fig. 4 is a diagrammatic view of the cutting-blade and box-dummy, illus-

trating the method of severing the dummy into halves. Fig. 5 is a side elevation of the dummy when severed to form two box halves. Fig. 6 is a sectional elevation through the dummy, showing a mandrel within the dummy. Fig. 7 is a side elevation of a portion of the preferred form of cutting-blade.

Similar numerals and letters of reference indicate corresponding parts throughout the several views.

In the manufacture of boxes it has been customary to build up the box by first forming two bands, as 1, Fig. 5, then securing the pieces or heads 2 to these bands, and finally securing to either of these bands on its inner surface another band, which fits into the band opposing it, thus completing the box. It is the object of my invention to dispense with the independent formation of these separate bands.

The description of my invention will hereinafter be applied to the construction of a single box; but it is apparent that it applies to the construction of a number as well.

I form a mandrel, such as 3, Fig. 6, preferably of wood or of any other desired material, of a shape conforming to the interior cross-section of the box to be produced and about which the box is to be built up. I then take a single strip or band 4 of material, such as pasteboard or the like and as wide as the box, and secure it about the edge or periphery of the mandrel.

In Fig. 6 I have illustrated my invention in connection with the manufacture of a circular box, so that the mandrel 3 shown therein is circular, and the band 4, just before mentioned, is disposed around the periphery of the mandrel and its ends secured. To the edges of the band are then secured the end pieces, such as illustrated at 2 in Fig. 5 and similarly lettered in Fig. 6, and both the band 4 and end pieces 2 may be covered by finishing material, if desired. This completes the dummy, in which the mandrel is snugly incased.

The construction of a machine to properly sever the band 4 when circularly disposed—in other words, the machine for operating on a circular mandrel—is illustrated in Figs. 1, 2, and 3, which I shall now describe. To a



suitable bed-plate 5 is secured a pillar or standard 6, of what I may call for brevity sake a "head-stock," of any desired construction, preferably as shown in the drawings, wherein it comprises a central standard 7, base 8, head 9, longitudinally grooved, and a cap 10, secured on the head by bolts 11. The base 8 is secured to the bed-plate 5 in a similar way, as by bolts 12. The head 9 and cap 10 form a journal-bearing for a shaft 13, to one end of which is secured a hand-wheel 14, the other end having an enlargement 15, carrying a disk-like head 16, to which is secured a circular blade 17, having a cutting edge 18, by means of a detachable plate 19 and screw 20, which latter passes through an aperture in the cutting-blade. The cutting-blade 17 may be formed as desired; but I prefer the construction shown in Fig. 7, in which one side of the blade at the periphery is provided with a long acute bevel *a* and a short bevel *b*, which form the cutting edge 18. The object of the long and short bevel of different planes is to make the blade perform two functions, one of which is the severance of the band 4. The other is to give the dummy a movement transverse to its plane of rotation. The peculiar construction of the bevels enables the latter operation to be performed, the former being accomplished by the cutting edge.

From the foregoing it is apparent that rotation can be given to the cutting-blade either by the hand or by power, and that means are provided for supporting the cutting-blade and restraining longitudinal movement of its shaft.

The means for supporting the mandrel and box-dummy will now be described. In front of the standard 7 (or head-stock) the bed 5 is provided with a feather or rib 21, over which is adapted to move a bracket or tail-stock 22, comprising a foot 23, groove *d*, to receive the feather 21, as shown in Fig. 2, and the perpendicular or abutment piece 24, to which is secured or formed the guide-block 25. The tail-stock is adapted to be moved upon the bed 5 and feather 21 to bring the guide-block 25 in or out of alinement with the cutting-blade 17 and to be secured in its proper relative position. To enable this latter to be done, I have provided the foot 23 with a threaded aperture, in which is adapted to play a threaded stem 26, having an operating-handle 27 fixedly secured thereto, forming a clamp, which by turning will cause the threaded stem to impinge against the feather 21 when it is desired to fix the head-stock 22 in position, or by reversing the movement of the handle 27 the stem 26 will be freed from the contact with the feather to allow of the tail-stock being moved. By reference to Fig. 3 it will be seen that the guide-block 25 has a segmentally-formed ledge 28, formed concentric with the cutting-blade 17, and between the abutment 24 of the tail-stock and the ledge 28 is formed a channel or groove 29, preferably following the curve of the ledge 28.

With a machine thus constructed and a box-dummy formed as previously described it is only necessary to bring the tail-stock under the cutting-blade, adjusting the position of the guide-block relative to the cutting-blade, that the severance of the band 4 will be had at a suitable point between the end pieces 2, the tail-stock being then fixed in position by the means hereinbefore described, at which time the machine is ready to operate upon the box-dummy.

By reference to Fig. 3 it will be seen that one end of the guide-block 25 is cut away at 30 to form a mouth or opening in which the box-dummy is placed, the mouth being extended by the inclined plate 30<sup>a</sup>, secured to the guide-block by the flange 30<sup>b</sup>, the flanges or overlapping edge of the ends 2 embracing the ledge 28, as shown in Fig. 2, confining the hereinafter-described movement of the dummy in a fixed circular line, and by pressing the dummy against the cutting edge of the knife-blade 17, either by hand, gravity, &c., and by rotating the blade in the direction of the arrow, Fig. 3, the cutting edge of the blade will penetrate through the band, the band being supported by the mandrel 3, the frictional contact of the parts moving the box-dummy along the ledge 28 in the direction of the movement of the cutting-blade, rotating the dummy, so that the severance of the band 4 will be completed, the overlapping of the edges of the end pieces 2 on the one hand and the before-mentioned action of the cutting-blade (shown in Fig. 7) on the other hand keeping the dummy pressed against the abutment 24, restraining longitudinal movement of the dummy, so that alined severance of the band will be had, the dummy ultimately being expelled, by the continuous rotation of the cutting-blade, from the supporting-ledge 28 to 31, at which time the severance of the band 4, as illustrated in Fig. 5, has been completed, after which the severed ends or "heads," as they may be called, of the dummy may be provided with interior bands, as hereinbefore described, to complete the box. The main essential feature of the device in this regard, it will be noticed, consists in the formation of a bed or support for the mandrel and dummy coincident with the direction of their movement, which support, as before described, can be either a stationary surface over which they roll, or which may be combined with movable elements, in which may be included cutting instrumentalities.

From the foregoing it will be seen that my invention can be carried out in machines varying in structural character, the main essentials of which is a rotatable severing or cutting blade, a bed whereon the mandrel and dummy can rotate either about a stationary point or on a plane concentric with the edge of the cutting-blade, the plane of the bed being coincident to the plane of movement of the mandrel and dummy, and means for guid-



ing the mandrel during such movement and preventing it from becoming displaced during the cutting operation.

Having described my invention, I claim—

5 1. In a box-making machine, the combination of a cutting-blade, a movable mandrel, a supporting-bed for the mandrel the plane of which is coincident with the plane of the latter's movement, and means for preventing the displacement of the mandrel, substantially as described.

2. In a box-making machine, the combination of a rotatably-supported cutting-blade, a box-mandrel, and a supporting-guideway for the mandrel, substantially as described.

3. The combination in a device of the class described, of the rotatably-supported cutting-blade, a box-mandrel, and a restraining guideway for said mandrel conformed to the plane of movement of said mandrel, substantially as described.

4. The combination in a device of the class described, of the rotatably-supported cutting-blade, an independently-rotatable box-mandrel, and a supporting and restraining guideway conformed to the plane of movement of said mandrel, said guideway being adapted to be moved to or from the plane of movement of said knife-blade, substantially as described.

5. The combination, in a device of the class described, of a rotatably-supported cutting-blade, a box-mandrel, and a support for the mandrel adjustable to and from the plane of movement of said blade, substantially as described.

6. The combination with the head-stock 6 carrying the longitudinal shaft 13, the circular blade 17, the tail-stock 22, and the segmental ledge 28 formed in said tail-stock, substantially as described.

7. The combination with the head-stock 6 carrying the longitudinal shaft 13, the circular blade 17, the tail-stock 22, the segmental ledge 28 formed on said tail-stock, and the abutment 24 at the rear of said ledge, substantially as described.

8. The combination with the head-stock 6 carrying the longitudinal shaft 13, the circular blade 17, the tail-stock 22, the segmental ledge 28 formed in said stock, the abutment 24 at the rear of said ledge, and the channel 29 formed in said ledge adjacent said abutment, substantially as described.

9. In a device of the class described, the combination with a box-mandrel, a support for the mandrel, and a rotatably-supported cutting-blade having a cutting edge formed by bevels of unequal angles, substantially as described.

10. In a device of the class described, the combination with a box-mandrel, a support for the mandrel having a guideway and abutment, and a rotatably-supported cutting-blade formed by bevels of unequal angles, the most acute bevel being presented toward the abutment, substantially as described.

11. The combination with the circular blade having the bevels *a*, *b*, forming the cutting edge 18, the bevel *a* being the most acute, a box-mandrel, and a supporting-guideway and abutment for said dummy, the bevel *a* being presented toward the abutment, substantially as described.

Signed at the city of Brooklyn, county of Kings, and State of New York, this 31st day of March, 1896.

JOSEPH H. D. REHBERGER.

Witnesses:

W. L. DONOVAN,  
G. L. LIEBERMANN.