No. 648,639. Patented May 1, 1900.

H. B. SMITH.

GAGE FOR MAKING PAPER BOXES.

(Application filed Dec. 21, 1899.)

(No Model.)

Fig. 1.

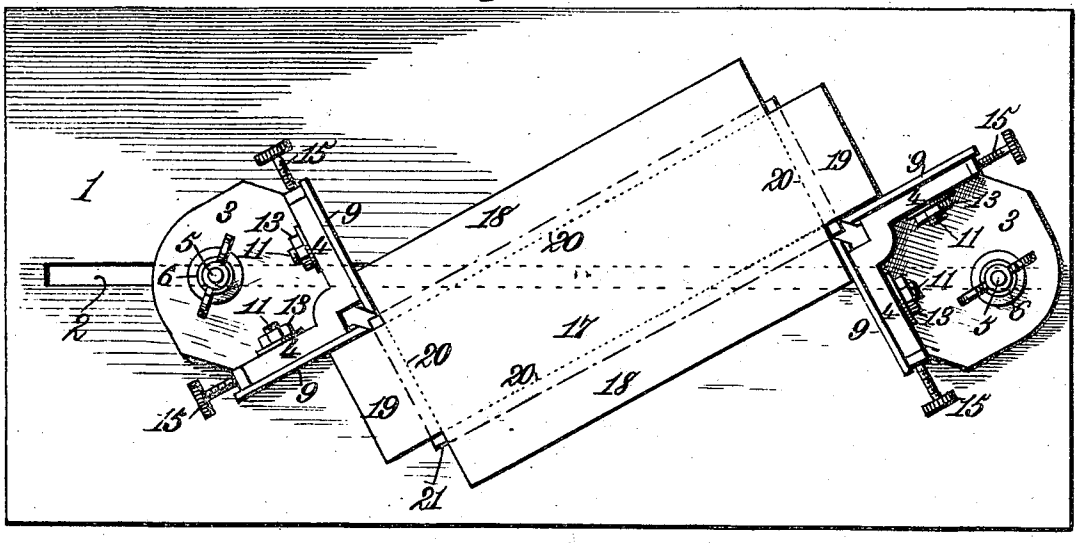


Fig. 2.

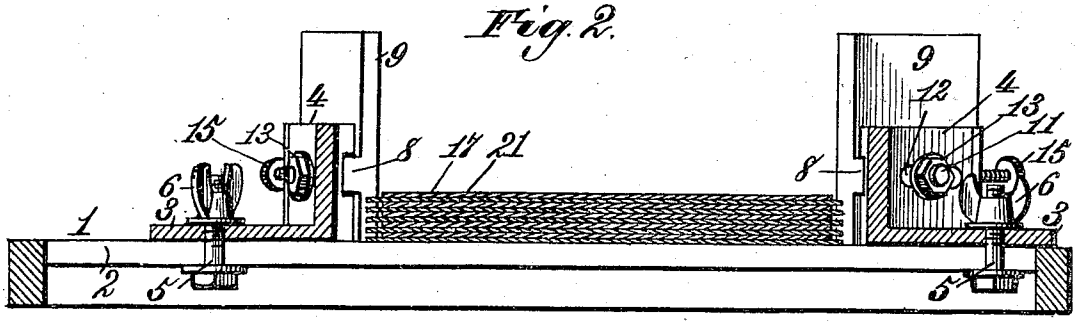


Fig. 3.

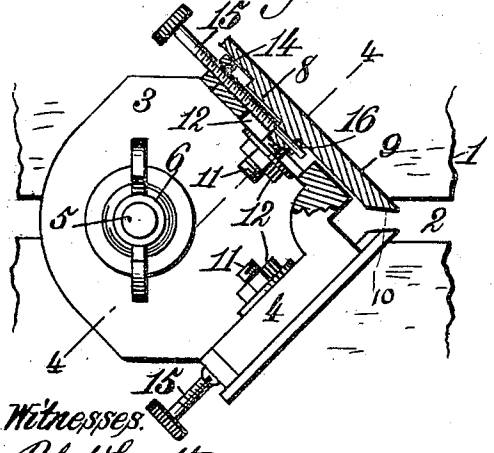
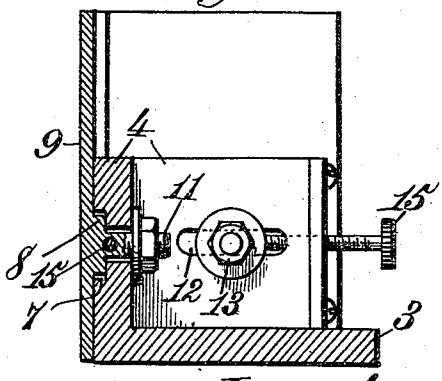


Fig. 4.



Witnesses.
Robt. Gratt.
W. H. Clarke.

Inventor.
Harry B. Smith.
By J. Granville Meyers.
Atty.

UNITED STATES PATENT OFFICE.

HARRY B. SMITH, OF NEW YORK, N. Y.

GAGE FOR MAKING PAPER BOXES.

SPECIFICATION forming part of Letters Patent No. 648,639, dated May 1, 1900.

Application filed December 21, 1899. Serial No. 741,078.

To all whom it may concern:

Be it known that I, HARRY B. SMITH, a citizen of the United States, residing at New York, Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Gages for Making Paper Boxes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a gage for making paper boxes, and especially designed for applying the extended bottoms of boxes to the body of the latter. There is at present a large demand in the trade for paper boxes having extended bottoms—that is to say, boxes having bottoms that extend or project laterally on all sides a slight distance beyond the sides and ends of the boxes, against which the bottom edges of the tops or covers of the boxes seat. In the manufacture of such boxes it has been the practice to first form the body of the box and then secure to the bottom of such body by means of paste or other suitable adhesive the extended bottom, consisting of a flat sheet of paper-board of the same shape as the bottom of the box-body, but of slightly-greater dimensions in each direction, so that the extended bottom when secured in place projects laterally beyond the sides and end of the box. Heretofore such bottoms have been secured to the box-bodies by hand, the operator having nothing to guide him in the operation but the eye, and for this reason the manufacture of such boxes has been slow, laborious, and unsatisfactory, resulting in imperfectly-constructed boxes at a relatively-large cost.

It is the object of the present invention to provide a gage by means of which the extended bottoms of the boxes may be applied to the box-bodies with absolute accuracy and uniformity and with great rapidity; and it also has for its object to make the gage adjustable in such manner that it will accommodate boxes of different sizes and shapes.

It has for a still further object to provide a gage of the character described in which the different adjustments can be quickly and easily made and which shall be simple and inexpensive in construction and effective and accurate in operation and which will permit the extended bottoms to be applied to the box-body blanks before the latter are folded up into shape, whereby the boxes may be shipped or stored in a flat condition in readiness to be bent up and secured into shape for use.

To these ends my invention consists in the features and in the construction and combination and arrangement of parts hereinafter described, and particularly pointed out in the claims following this description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a top plan view of my improved device, showing an extended bottom and box-blank in place therein. Fig. 2 is a longitudinal section thereof. Fig. 3 is an enlarged plan view, partly in section, of one of the gages; and Fig. 4 is a vertical sectional view taken on the line 4 4 of Fig. 3.

Referring to the drawings, the numeral 1 indicates a base or platform, which may, if desired, be in the form of a table and is provided with a longitudinal slot 2. Disposed upon the opposite ends of the base or platform are two adjustable gages, and inasmuch as said gages are duplicates one of the other the construction of one only of them need be described, and is as follows.

The numeral 3 indicates the bed or bottom of the gage, consisting of a flat plate resting upon the platform 1 and having two flat and vertical flanges or sides 4, which intersect each other at a right angle. The bed 3 is adjustably secured to the platform 1 by a headed bolt 5, which passes through the slot 2 and through a bolt-hole formed in the bed, and has screwed over its upper threaded end a thumb-nut 6. It is obvious that when the nut is loosened the bed may be moved laterally or longitudinally upon the platform and when adjusted to the desired position may be locked in place by screwing up the nut. Formed in the face of each of the vertical sides or flanges 4 is a horizontal groove 7, in which is movably fitted a corresponding rib 8, formed on the rear side of a flat guide-plate 9. The guide-plates are thus movable toward and from each other at a right angle, and their adjacent vertical edges are preferably chamfered or beveled, as at 10, at an angle of approximately forty-five degrees.

Projecting rearwardly from each of the ribs 8 is a threaded stud or bolt 11, which extends through a horizontal slot 12, formed in the adjacent side or flange 4, and screwed over the rear end of said stud or bolt is a nut 13, by means of which the guide-plate is movably held in position on the side or flange 4. A threaded perforation 14 is formed in the rear edge of the side or flange and is engaged by an adjusting-screw 15, the inner end of which is unthreaded and passes through a suitable perforation formed in the corresponding stud or bolt 11 and is held in place therein by a pin or key 16, passed transversely through the end of the adjusting-screw. It will be evident that by turning the adjusting-screws in one direction or the other the adjacent beveled edges of the guide-plates will be moved toward or from each other for the purpose hereinafter explained.

The operation of my improved gage is as follows, it being premised that in the manufacture of paper boxes the body of the box is usually formed from a blank similar to that shown in Fig. 1 of the drawings, wherein the numeral 17 indicates the bottom of the box-body, 18 the side flaps, and 19 the end flaps, which are respectively adapted to be folded up vertically at right angles to the bottom 17 on the scored lines 20, and the numeral 21 indicates the extended outer bottom. To prepare or place the device in readiness for attaching the extended bottoms to the box-body blanks, the thumb-nuts 6 are loosened and the two gages are adjusted at such a distance apart that when a box-blank is placed between the two gages in such manner that the latter will fit within the notches at the two diagonal opposite corners of the blank the faces of the guide-plates 9 will loosely engage the adjacent end edges of the side and end flaps 18 and 19, sufficient play or clearance being provided to permit the ready insertion and removal of the blank between the gages. The gages are also adjusted laterally about their bolts 5 until the faces of the guide-plates are exactly parallel with the adjacent end edges of the side and end flaps of the box-blank. After these adjustments have been effected the nuts 6 are tightened up to lock the gages firmly in their adjusted positions. The guide-plates 9 of each gage are then adjusted at such distance apart that when one of the extended bottoms 21 is placed between the gages the two diagonal corners of the bottom will project between the two guide-plates of each gage and will snugly fit the beveled edges of said guide-plates. In using the device the operator first places one of the extended bottoms 21 between the gages and then in the same manner places a box-blank upon the top of the extended bottom, paste or other adhesive having been first applied to either the extended bottom or to the bottom of the box-blank. This operation is successively repeated until as many bottoms and box-blanks have been arranged between the gages as the height of the latter will accommodate, when the entire pack or pile may be bodily removed and placed in a press or otherwise submitted to pressure until the extended bottoms and box-blanks have become thoroughly attached.

If perfectly-square boxes only are to be manufactured, it will be obvious that the longitudinal adjustment of the gages toward and from each other will alone be sufficient, for the opposite diagonal corners of the boxes will always lie in the same straight line irrespective of the size of the boxes and the faces of the guide-plates will in all cases accurately engage and lie parallel with the end edges of the side and end flaps of the box-blanks. It is obvious, however, that when it is desired to make a box of oblong shape or of unequal width and length it will be necessary to make provision for adjusting the gages laterally as well as longitudinally, for it will be apparent that the guide-plates would not in such case accurately engage and lie parallel to the end edges of the side and end flaps of the box-blank, and hence the gages have to be shifted laterally to one side or the other of the central slot and to a greater or less extent, dependent upon the size of the box-blank. This is accomplished by loosening the nuts 6 and turning the gages about the bolts 5 as centers and then tightening up the nuts in the manner before described.

It will be apparent that one of the gages may be affixed to the platform or bed so as to be incapable of being adjusted longitudinally, and while I prefer to make both gages longitudinally adjustable I wish it to be understood that I include both arrangements when I refer to the gages as being longitudinally adjustable toward each other. It will also be apparent to those skilled in the art that the construction and arrangement of parts may be variously altered, modified, or changed without departing from the spirit of my invention, and this is especially true of the means employed for effecting the different adjustments of the parts.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a gage for making paper boxes, the combination with a suitable base or platform, of two oppositely-arranged, independent gages constructed to engage the opposite diagonal corners of an open box-blank and means for adjusting said gages toward and from each other, substantially as described.

2. In a gage for making paper boxes, the combination with a suitable base or platform, of two independent and oppositely-arranged laterally-adjustable gages constructed to engage the opposite diagonal corners of an open box-blank, and means for adjusting said gages toward and from each other, substantially as described.

3. In a gage for making paper boxes, the combination with a suitable base or platform, of two independent gages arranged and lon-

gitudinally adjustable on said base or platform, and each provided with two disconnected vertical guide-plates disposed at an angle to one another, substantially as described.

4. In a gage for making paper boxes, the combination with a suitable base or platform, of two independent gages arranged and longitudinally adjustable on said base or platform and each provided with two disconnected vertical guide-plates disposed at an angle to one another, and means for adjusting the vertical adjacent edges of said guide-plates toward and from one another, substantially as described.

5. In a gage for making paper boxes, the combination with a suitable base or platform, of two gages arranged and longitudinally adjustable on said base or platform and each provided with two vertical guide-plates disposed at an angle to one another and having their adjacent vertical edges beveled or chamfered, and means for adjusting said guide-plates toward and from each other, substantially as described.

6. In a gage for making paper boxes, the combination with a suitable base or platform, of two gages arranged and longitudinally adjustable on said base or platform and each provided with two vertical guide-plates disposed at an angle to one another, means for adjusting the adjacent vertical edges of said guide-plates toward and from one another, and means for laterally adjusting said gages, substantially as described.

7. In a gage for making paper boxes, the combination with a suitable base or platform, of two gages each comprising a flat bed movably arranged on the base or platform and provided with two vertical flanges arranged at an angle to each other, guide-plates movably supported on the faces of said flanges, means for adjusting said guide-plates toward and from each other, and means for adjusting the gages longitudinally on the base or platform, substantially as described.

8. In a gage for making paper boxes, the combination with a longitudinally-slotted base or platform, of two gages each comprising a flat bed movably seated on the platform and provided with two vertical flanges arranged at an angle to each other, guide-plates supported on the faces of said flanges, and a locking device carried by the bed and projecting through the slot in the base or platform and engaging the bottom of the latter to lock the gage thereto, substantially as described.

9. In a gage for making paper boxes, the combination with a longitudinally-slotted base or platform, of two gages each comprising a flat bed movably seated on the platform and provided with two vertical flanges arranged at an angle to each other, guide-plates supported on the faces of said flanges, and a headed bolt passing through the slot in the base or platform and through a bolt-hole in said bed and having a nut screwed over its upper end for locking the gage to the base or platform, substantially as described.

10. In a gage for making paper boxes, the combination with a suitable base or platform, of two gages adjustably movable on said base or platform and each comprising a bed provided with two flat vertical flanges disposed at an angle to each other, each of said flanges being provided on its face with a horizontal groove, flat guide-plates movably arranged on the faces of the flanges and provided on their rear sides with ribs movably fitted in said grooves, threaded studs carried by the guide-plates and projecting rearwardly through slots formed in the vertical flanges, nuts screwed over the ends of the studs behind the flanges, and means for adjusting the studs in the slots to adjust the adjacent vertical edges of the guide-plates toward and from each other, substantially as described.

11. In a gage for making paper boxes, the combination with a suitable base or platform, of two gages adjustably movable on said base or platform and each comprising a bed provided with two flat vertical flanges disposed at an angle to each other, each of said flanges being provided on its face with a horizontal groove, flat guide-plates movably arranged on the faces of the flanges and provided on their rear sides with ribs movably fitted in said grooves, projections on said ribs extending through horizontal slots formed in the vertical flanges, and adjusting-screws fitted in threaded apertures in the rear edges of the vertical flanges and engaging said projections to adjust the vertical edges of the guide-plates toward and from each other, substantially as described.

12. In a gage for making paper boxes, the combination with a suitable base or platform, of two gages constructed to embrace the opposite diagonal corners of an open box-blank, and means for adjusting one of said gages toward and from the other, substantially as described.

13. In a gage for making paper boxes, the combination with a suitable base or platform, of two pivotally-mounted gages constructed to embrace the opposite diagonal corners of an open box-blank, and means for adjusting one of said gages to and from the other, substantially as described.

14. In a gage for making paper boxes, the combination with a suitable base, of a laterally and longitudinally adjustable gage mounted on said base, and constructed to embrace the edges of an open box-blank at one corner, and means for similarly embracing an opposite corner of said blank substantially as described.

15. In a gage for making paper boxes, the combination with a suitable base, of an adjustable gage mounted on said base and constructed to embrace the edges of an open box-

blank at one corner, and adjustable means for similarly embracing an opposite corner of the blank, substantially as described.

16. In a gage for making paper boxes, the combination of a suitable base, with two oppositely-disposed gages mounted on said base and each having a pair of disconnected diverging side plates arranged to embrace the edges of an open box-blank at the opposite diagonal corners thereof, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY B. SMITH.

Witnesses:
M. D. SMITH,
FLORENCE M. SMITH.