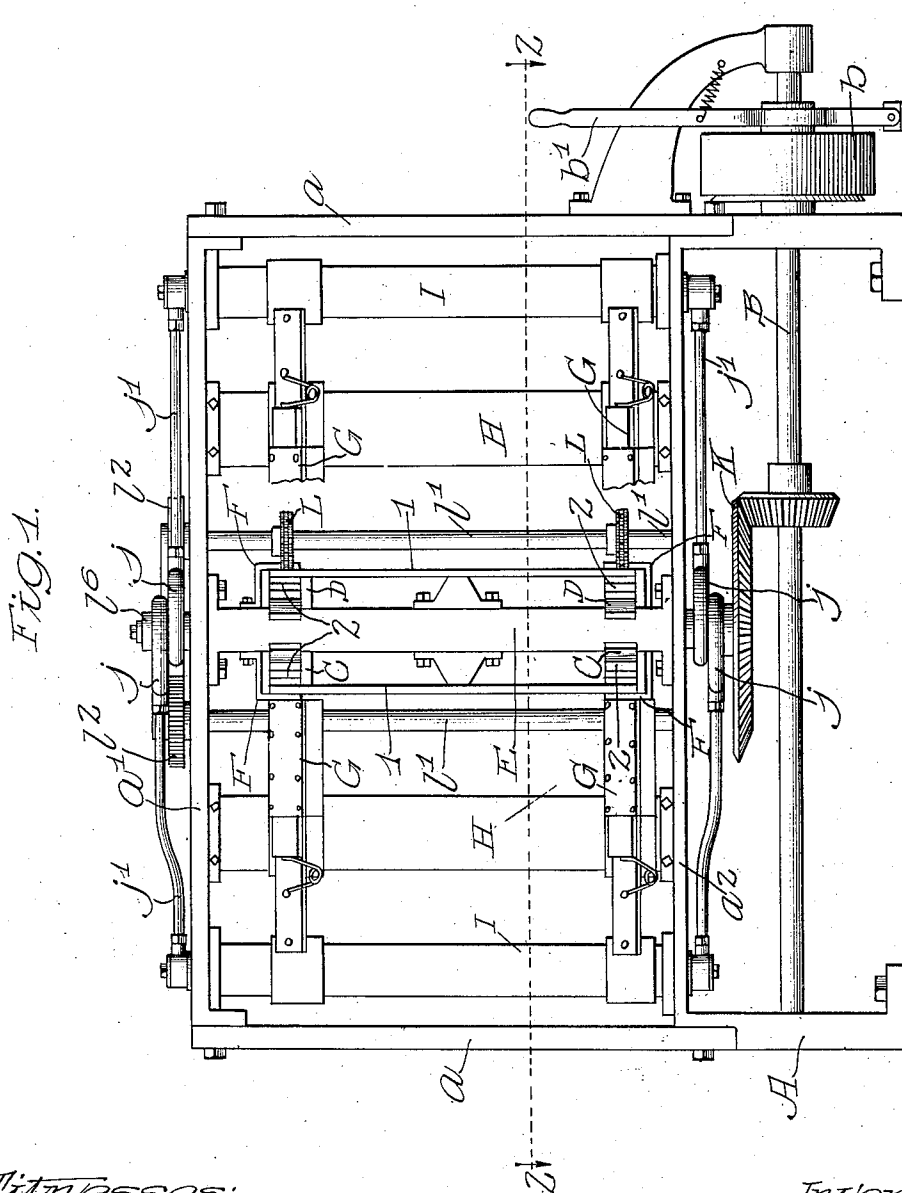


J. J. MILLER.
WIRE BOUND BOX BLANK MACHINE.
APPLICATION FILED JAN. 10, 1912.

1,291,071.

Patented Jan. 14, 1919.
2 SHEETS—SHEET 1.



Witnesses:
G. W. Marus Jr.
P. Burkhardt.

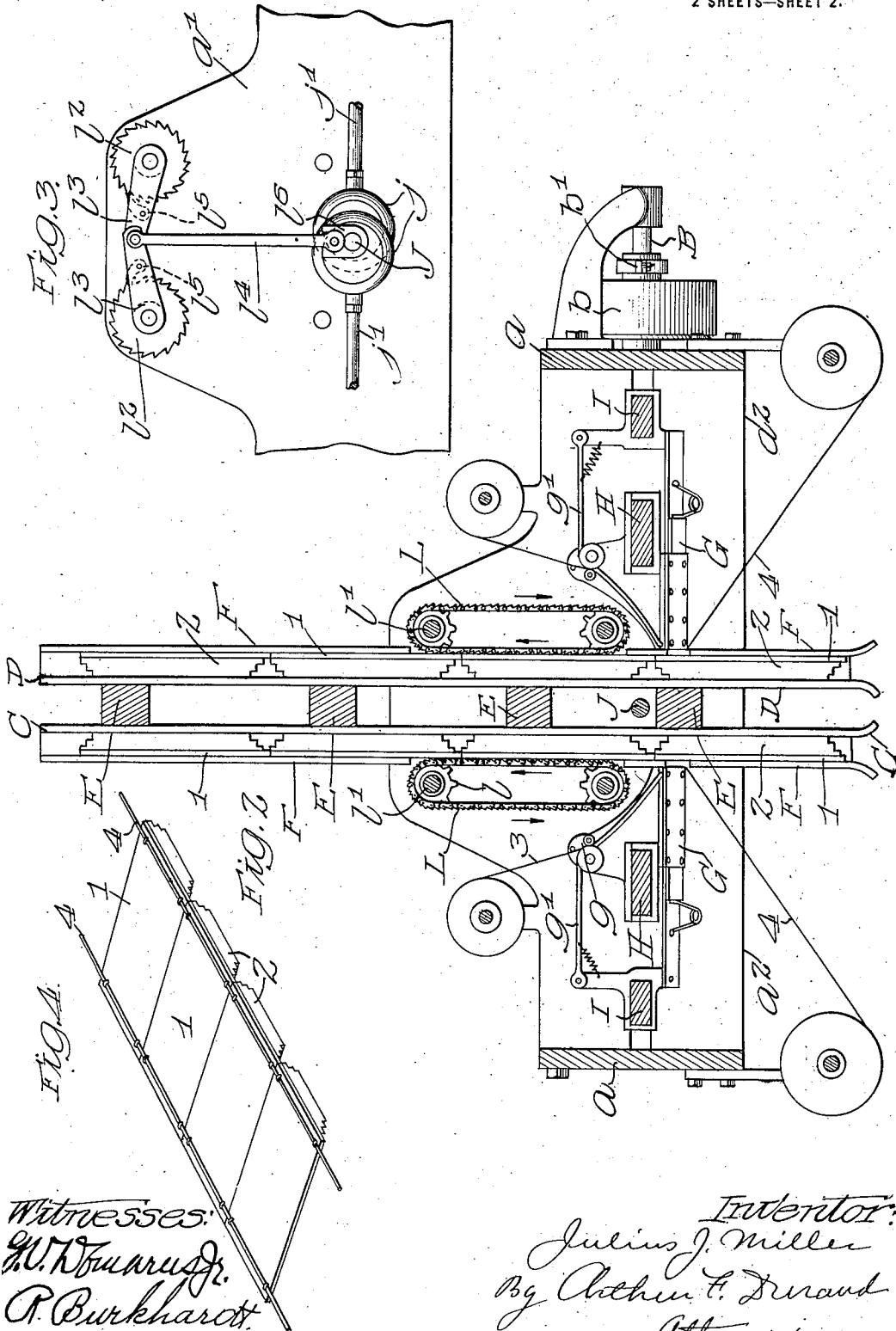
Inventor:
Julius J. Miller
By Arthur F. Durand
Attorney

J. J. MILLER.
WIRE BOUND BOX BLANK MACHINE.
APPLICATION FILED JAN. 10, 1912.

1,291,071.

Patented Jan. 14, 1919.

2 SHEETS—SHEET 2.



Witnesses:
W. W. K. K. K.
P. Burkhardt.

Inventor:
Julius J. Miller
By Arthur F. Deraud
Attorney

UNITED STATES PATENT OFFICE.

JULIUS J. MILLER, OF ST. JOSEPH, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO WIREBOUNDS PATENTS COMPANY, OF KITTERY, MAINE, A CORPORATION OF
MAINE.

WIRE-BOUND-BOX-BLANK MACHINE.

1,291,071.

Specification of Letters Patent.

Patented Jan. 14, 1919.

Application filed January 10, 1912. Serial No. 670,530.

To all whom it may concern:

Be it known that I, JULIUS J. MILLER, a citizen of the United States of America, and resident of St. Joseph, Berrien county, Michigan, have invented a certain new and useful Improvement in Wire-Bound-Box-Blank Machines, of which the following is a specification.

My invention relates to wire bound box blank machines of that kind in which means are provided for securing the binding wires to the veneer by staples that also fasten the cleats in place. Various machines of this kind have been proposed and used, but so far as I am now aware, each machine heretofore has been capable of making only one blank at a time. This, of course, tends to limit the output of a machine of this kind.

The principal object of my invention is, therefore, to provide a machine of such character that a plurality of blanks can be made at the same time and by practically one and the same operation.

It is also an object to provide a construction whereby the doubling or increase of work done by the machine will not require any more attendants for the operation thereof than the previous machines in which only one blank at a time could be made.

Another object is to provide a box blank machine in which the arrangement is such that the pound of the staplers will be less objectionable than heretofore.

To these and other useful ends, my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings—

Figure 1 is an end elevation of a box blank machine embodying the principles of my invention.

Fig. 2 is a horizontal section on line 2—2 in Fig. 1.

Fig. 3 is a detail plan view of the ratchet mechanism at the top of the machine for operating the feed mechanism by which the blank sections are moved forward to be stapled and wired together.

Fig. 4 is a perspective of one of the wire bound blanks.

As thus illustrated, my invention comprises a frame or body A having side portions a connected together by horizontal webs a' and a'' , and by a drive shaft B having a pulley and clutch b of any suit-

able character by which the machine is driven. A hand lever b' is provided for controlling said clutch to start and stop the machine.

The cleat guides C are arranged one above the other at one side of the longitudinal center of the machine, and the similar guides D are arranged one above the other at the other side of said center. The guides C are separated from the guides D by upright frame members E to which the guides are adjustably secured. The said guides are made of angle iron, and each guide has an overlying guard or plate F which bears on the outer surface of the sheets of veneer 1 to keep the cleats 2 in the guides, as each blank, with this arrangement, travels in a vertical plane.

The staplers G are of any suitable, known or approved construction, and arranged horizontally at points opposite the said cleat guides. These staplers are mounted on the vertical beams H which are disposed at opposite sides of the guides and which rigidly connect the web a' with the web a'' of the frame. These staplers are operated by the cross heads or beams I that are disposed vertically at opposite sides of the machine, and which slide in slots in the webs a' and a'' when the machine is in operation. The staple wire feed devices g are of any suitable character, are operated in the usual manner by pawls g' carried on the cross heads I, whereby the wire 3 is fed for the staples. The binding wires 4 are fed from reels of any suitable character.

To operate the cross heads I a vertical and central shaft J is provided and mounted to rotate in bearings on the webs a' and a'' , this shaft being between the two sets of cleat guides. At its upper and lower ends said shaft J is connected by eccentric straps j and pitmen j' with the ends of the cross heads I, whereby the rotating of said shaft serves to reciprocate the said cross heads and thereby operate the said staplers. The shaft J is connected by bevel gearing K with the drive shaft B, whereby all four staplers are operated from the one shaft.

The mechanism for feeding the blanks along the guides consists of a plurality of link belts L, one for each cleat guide, said belts being provided with teeth that impinge upon the outer surface of the veneer to move

the blank along. These feeding belts or chains are arranged immediately behind the said staplers and are carried on sprockets L mounted on vertical shafts L' , which latter have their bearings on the frame. The length of contact of the chains L along the blanks is sufficient to prevent slippage and insure the desired feeding action.

The means for operating the said work feed mechanism consists of ratchet wheels L^2 fixed on the upper ends of the shafts L' , as shown in Fig. 3. The pawl arms L^3 are movable on the shafts L' , and are suitably connected with the pitman L^4 , whereby the arms are moved back and forth. The dogs or pawls L^5 on the arms L^3 engage the said ratchet wheels to give the chains L a step-by-step feeding motion in the direction indicated by the arrows. The pitman L^4 is operated by a crank arm L^6 on the upper end of the shaft J , the mechanism being timed to feed the blank forward while the staplers are drawing away from the work. The staples are driven while the blanks are stationary, and during the back stroke of the ratchet pawls L^5 , whereby the desired results are obtained.

There are different ways of using a machine of this character. For example, the veneer can be preliminarily fastened to the cleats, in any suitable manner and by any suitable machinery, and the blank sections thus made can then be placed by hand in the ends of the guides. The operator will push the inserted section, one at each side, along until the first staples are driven therein, and then the sections ahead will pull the newly wired section through the machine. It is as easy for the operator to place the two sections in the guides as it is to place one section in a single machine. With my double machine the two blanks are made at a time, with their inner surfaces facing each other, and the vertical planes of travel of the parallel blanks are so close together that it is practically as easy for the operator to keep the two runs going as it is one, the machine being what may be called a double run machine. The blanks thus fed through in two runs are made just twice as fast as on an ordinary single run machine, and at practically no increase of labor. When the veneer is thus preliminarily fastened to the cleats, no spacing devices are necessary, as the overhanging edges of the veneer serve as a means for spacing the cleats apart endwise. But, of course, spacing devices, of any suitable or well known character, can be employed, if desired.

A machine of this character is characterized, obviously, by just double the output of the ordinary machine in which only one blank is made at a time. Thus the cost of production of wire bound boxes is materially and very considerably reduced.

Furthermore, the arrangement involves an economical use of shafts and frame. In other words, there is only one eccentric shaft, and only one simple frame, notwithstanding the double capacity of the machine. In this way, and by reason of the close relation of the two sets of guides, the machine is of a unitary character. It is what may be called a multiple run unit, as two runs of blanks are going through at the same time.

Moreover, the staplers at one side counteract the staplers at the other side, and thus the pound and vibration is practically absorbed by the machine itself. Ordinarily, the pound or concussion of the heavy staplers is downward and is communicated, sometimes very violently, to the floor on which the machine stands. With the double opposed staplers, however, as herein shown and described, this difficulty is avoided.

The two paths of travel of the blank may be termed runways, and with the two runways so close together and arranged back to back, the machine is a unit. In fact, the two runways are disposed in operative relations to each other, and by this is meant that they are so disposed relative to each other that the two may be taken care of and operated like one machine, and in conjunction with other elements which are common thereto, or distinguished from two separate machines in which all parts are duplicated, and which require two complete sets of operatives or attendants. Of course, the capacity or output in any case may be doubled by using two machines, but that would double the cost of the machinery and the amount of labor required, and would not reduce the cost of production. With my invention, however, the output is doubled with only a moderate increase of cost of machinery, and with practically no increase of labor. Consequently, my invention tends to reduce the cost of production of boxes and crates of this or similar character.

What I claim as my invention is:

1. A machine for making box blanks, comprising a plurality of parallel runways for the blanks, and mechanism for fastening together the parts of the blank in said runways, the said runways being disposed adjacent each other, and in position to bring the blanks back to back in parallel vertical planes, and said mechanism being disposed at opposite sides of the paths of travel of said blanks.

2. A machine for making box blanks, comprising a plurality of runways for the blanks, mechanism for fastening together the parts of the blanks in said runways, a common frame for said runways and mechanism, and common operating means on said frame, said runways being disposed in position to bring the blanks back to back in parallel planes, and said mechanism being

disposed at opposite sides of the paths of travel of said blanks.

3. A machine for making box blanks, comprising a plurality of parallel runways for the blanks, and mechanism for fastening together the parts of the blanks in said runways, the said runways being disposed adjacent each other, said mechanism comprising opposed staplers, with the runways disposed between, whereby the impact of each stapler is counteracted by the impact of the other.

4. A machine for making box blanks, comprising a plurality of runways for the blanks, mechanism for fastening together the parts of the blanks in said runways, a common frame for said runways and mechanism, and common operating means on said frame, said mechanism comprising opposed staplers, with the runways disposed between, whereby the impact of each stapler is counteracted by the impact of the other.

5. A machine for making box blanks, comprising a plurality of parallel runways for the blanks, and mechanism for fastening together the parts of the blanks in said runways, the said runways being disposed adjacent each other, and so arranged that the cleat surfaces of the blanks in one runway face the cleat surfaces of the blanks in the other runway.

6. A machine for making box blanks, comprising a plurality of runways for the blanks, mechanism for fastening together the parts of the blanks in said runways, a common frame for said runways and mechanism, and common operating means on said frame, said runways being so disposed that the cleat surfaces of the blanks in one runway face the cleat surfaces of the blanks in the other runway.

7. A machine for making box blanks, comprising a plurality of runways for the blanks, disposed in vertical planes, mechanism for fastening together the parts of the blanks in said runways, a common frame for said runways and mechanism, common operating means on said frame, said operating means including a vertical shaft interposed between said runways for operating said mechanism, and means also driven from said shaft for moving the blanks along.

8. A machine for making box blanks, comprising a plurality of parallel runways for the blanks, mechanism for fastening together the parts of the blanks in said runways, the said runways being disposed adjacent each other, and a common operating means including a vertical shaft interposed between said runways and connected for actuating said mechanism.

9. A machine for making box blanks, comprising a plurality of parallel runways for the blanks, and mechanism for fastening together the parts of the blanks in said

runways, the said runways being disposed adjacent each other, said mechanism comprising horizontally disposed staplers operating in opposition to each other, with said runways disposed between the staplers which are opposed to each other.

10. A machine for making box blanks, comprising a plurality of runways for the blanks, mechanism for fastening together the parts of the blanks in said runways, a common frame for said runways and mechanism, and common operating means on said frame, said mechanism comprising horizontally disposed staplers operating in opposition to each other, with said runways disposed between the staplers which are opposed to each other.

11. A machine for making wire bound box blanks by securing flexible binding members to side material and cleats, comprising elements to support one row of cleats above the other, means to hold the side material against the cleats, feed mechanism to advance the side material and cleats a plurality of times for each blank, staplers having means to fasten binding wires to said side material and cleats, and driving connections for operating said staplers a plurality of times for each blank.

12. A machine for making wire bound box blanks by securing flexible binding members to side material and cleats, comprising elements to support one row of cleats above the other, means to hold the side material against the cleats, feed mechanism to advance the side material and cleats a plurality of times for each blank, staplers having means to fasten binding wires to said side material and cleats, and driving connections for operating said staplers a plurality of times for each blank, said elements including a guide which supports the upper cleats by engagement with the inner sides thereof, and a guide which supports the lower cleats by engagement with the outer sides thereof.

13. A machine for making wire bound box blanks by securing flexible binding members to side material and cleats, comprising elements to support one row of cleats above the other, means to hold the side material against the cleats, feed mechanism to advance the side material and cleats a plurality of times for each blank, staplers having means to fasten binding wires to said side material and cleats, and driving connections for operating said staplers a plurality of times for each blank, and other blank treating mechanism operating in a manner to counteract the impacts of said staplers.

14. A box-blank machine comprising, in combination, work-supporting means for supporting materials for a pair of box-blanks in back to back relation, and opposed

wiring and fastener-setting instrumentalities arranged at opposite sides of said work-supporting means for concurrently operating upon both sets of materials.

- 5 15. A box-blank machine comprising, in combination, supports for materials for a plurality of blanks, mechanism for fastening the respective blank materials together and attaching binding wires thereto, a com-
10 mon frame for said supporting means and

mechanism, and common operating means on said frame, said supporting means being so disposed that the cleats of the respective blank materials face one another.

Signed by me at St. Joseph, Mich., this 15
18th day of December, 1911.

JULIUS J. MILLER.

Witnesses:

MATTHIAS WEBER,
THOS. S. WALTON.