

(No Model.)

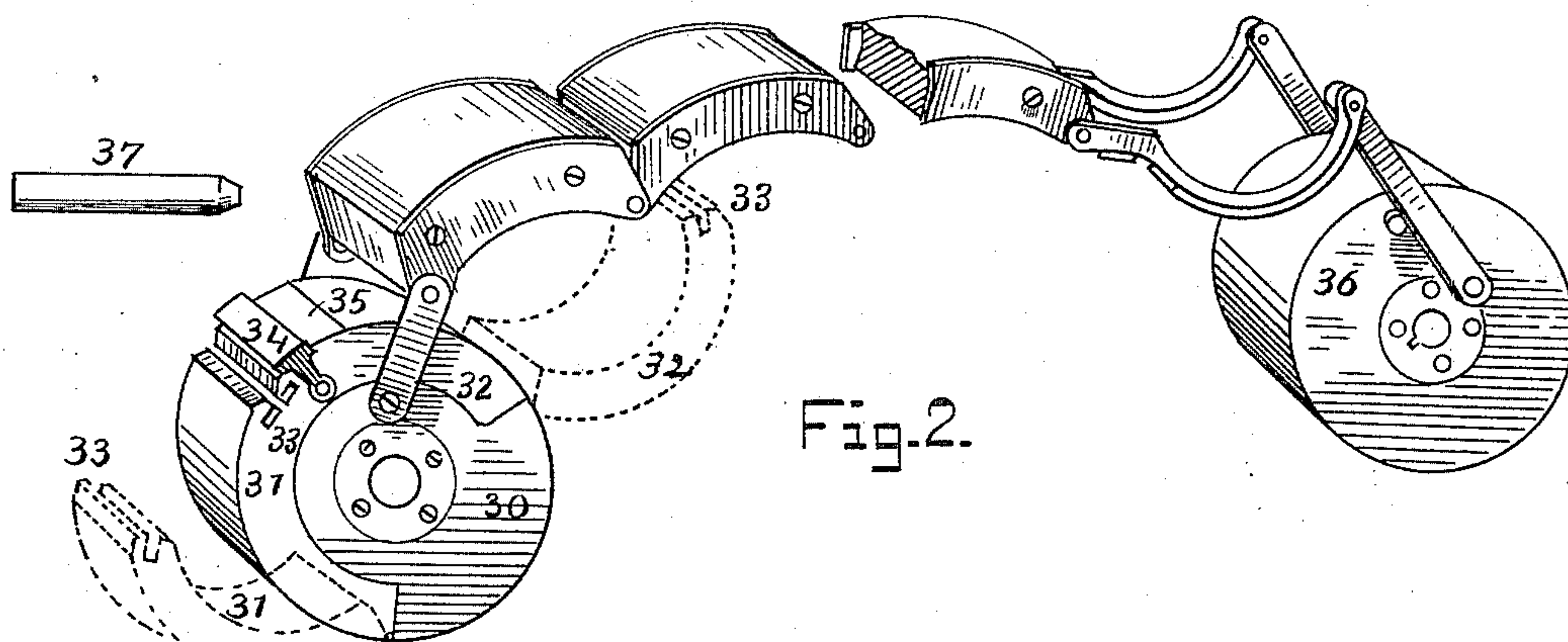
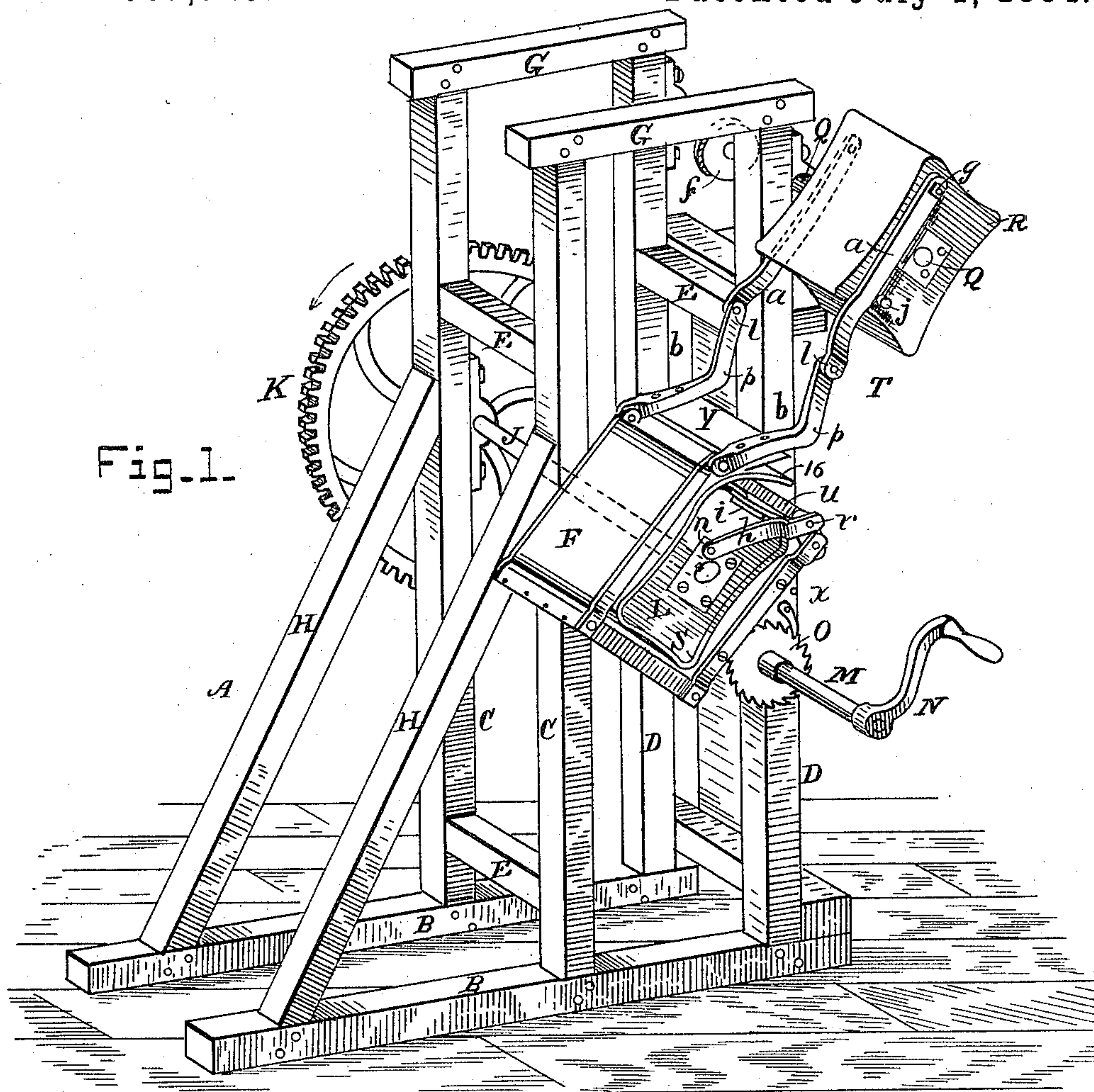
2 Sheets—Sheet 1.

J. A. PAIGE.

BOX MACHINE.

No. 301,145.

Patented July 1, 1884.



Witnesses.
H. E. Rennie.
L. J. White.

Inventor,
J. A. Paige.
Per C. C. Shaw, atty.

(No Model.)

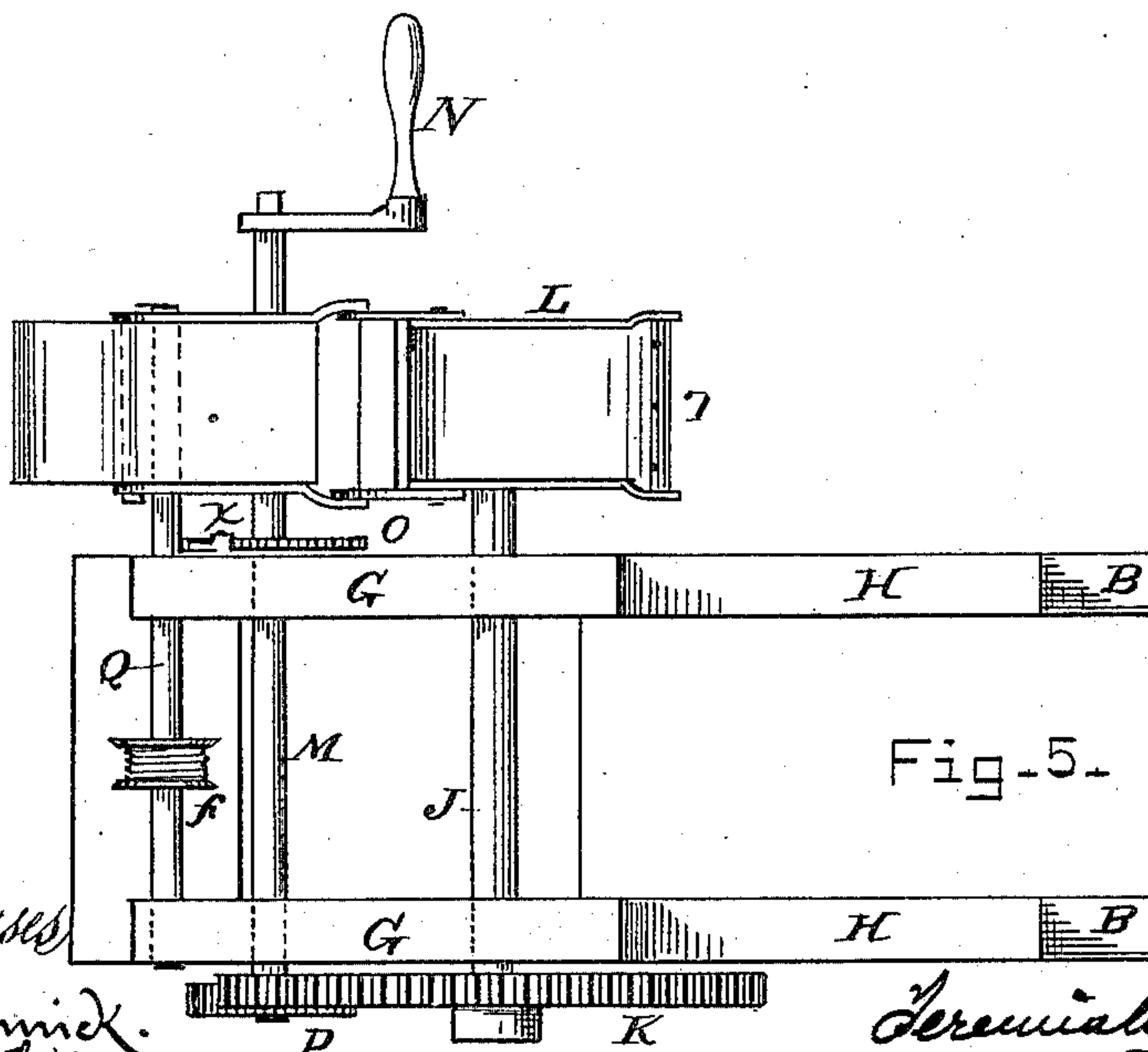
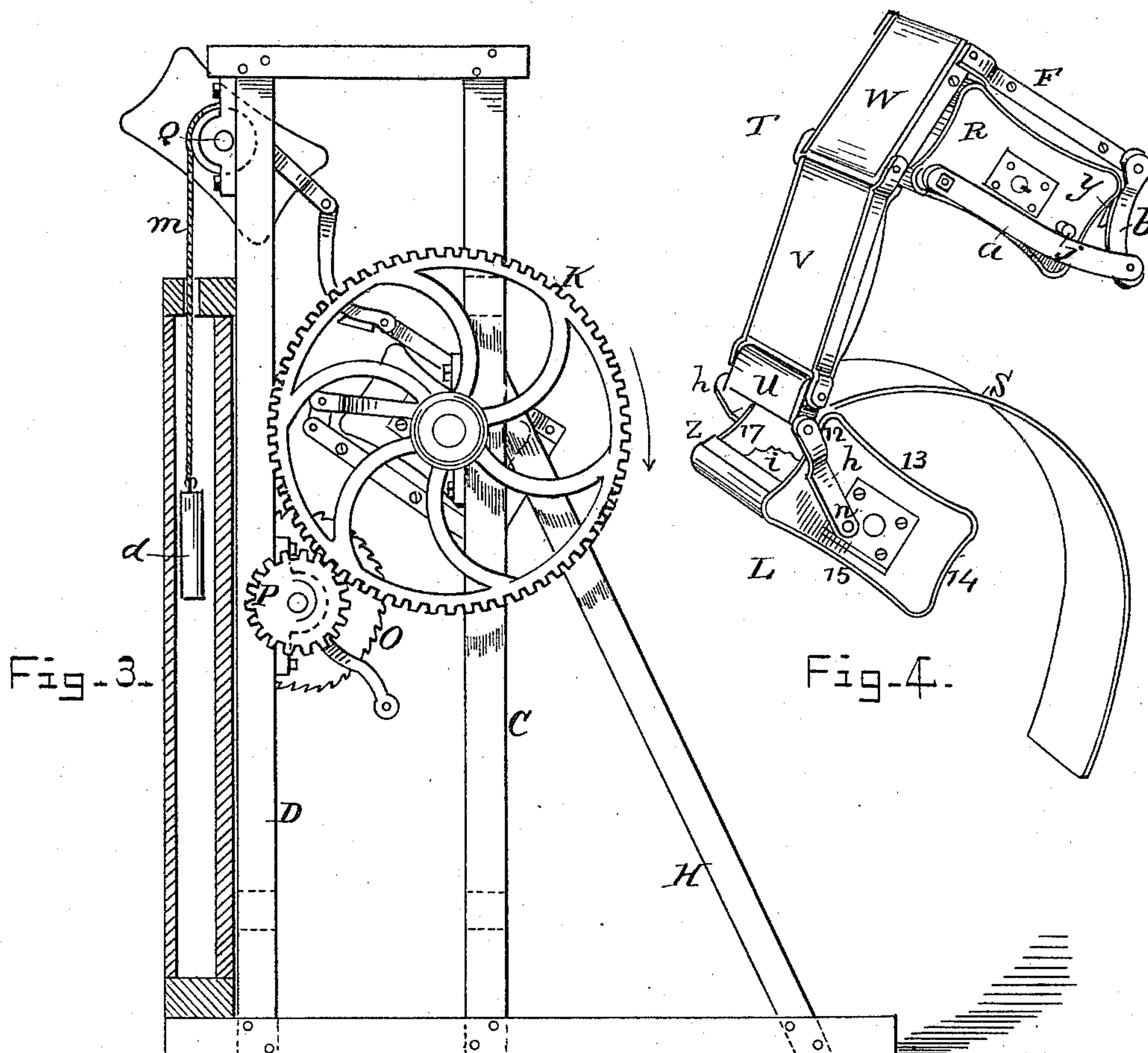
2 Sheets—Sheet 2.

J. A. PAIGE.

BOX MACHINE.

No. 301,145.

Patented July 1, 1884.



Witnesses
H. E. Remick.
L. J. White.

Inventor.
Jeremiah A. Paige,
Per C. C. Shaw, atty.

UNITED STATES PATENT OFFICE.

JEREMIAH A. PAIGE, OF WARNER, NEW HAMPSHIRE.

BOX-MACHINE.

SPECIFICATION forming part of Letters Patent No. 301,145, dated July 1, 1884.

Application filed March 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, JEREMIAH A. PAIGE, of Warner, in the county of Merrimac, State of New Hampshire, have invented a certain
5 new and useful Improvement in Box-Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which
10 said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an isometrical perspective view representing my improved box-machine in
15 use; Fig. 2, a like view showing a modification of the former, band, and drum; Fig. 3, a side elevation of the machine shown in Fig. 1; Fig. 4, a perspective view of the former, band, and drum detached; and Fig. 5, a top
20 plan view.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to a machine designed
25 for bending or forming the bodies of wooden boxes, measures, &c.; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a simpler, cheaper, and
30 more effective device of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following
35 explanation.

In the drawings, A represents the framework of the machine, which consists of the bed-pieces or sills B B, standards or posts C C D D, girders or beams E E, caps or ties G
40 G, and braces H H.

Journaled horizontally in proper bearings on the standards C C there is a shaft, J, carrying at one of its ends the large gear-wheel K, and at its other the former L. A shaft,
45 M, provided at one end with the crank N and at the other with the pinion P, is journaled centrally in suitable bearings on the standards D below the plane of the shaft J, but in parallelism therewith, the pinion being arranged
50 to intermesh with the gear K. A ratchet-wheel, O, is also mounted on the shaft M, and

provided with a spring-pawl, *x*, pivoted to one of the standards D.

Journaled in suitable bearings near the top of the standards D there is also a horizontally-
55 arranged shaft, Q, carrying near its center the pulley *f*, and at one of its ends the drum R, the pulley being provided with a cord, *m*, and weight or counter-balance *d*.

The former L is rectangular in shape, and
60 has its ends and sides curved inwardly, as best seen in Figs. 1, 3, and 4. Attached centrally to one end of the former there is a nailing-plate, *i*, and guard-plate *z*, the guard-plate having one of its edges slightly raised above
65 the nailing-plate, so that one end of the veneer S, or thin strip of wood from which the body of the box is to be formed, may be inserted beneath it, as shown in Figs. 1 and 4. A band, T, composed of the plates U V W F,
70 bent links *b b*, links *a a*, and links *h h*, united end to end by proper joints, connects the former L and drum R, the links *a* being jointed at *g* to the drum, and at *l* to the links *b*, and the links *h* jointed at *n* to the former, and
75 at *r* to the plate U. The inner faces of the plates or segments U V W F are slightly convex in vertical longitudinal section, or so constructed as to conform, respectively, with the sides and ends of the former L at all points
80 on which they bear. The drum R is also rectangular in form, corresponding in size and shape with the former L, and is provided with a laterally-projecting stud, *j*, on either side, to
85 prevent the links *a* from falling below the shaft Q as the band winds onto the drum. A narrow metallic plate, Y, is attached to the under side of the links *b*, said links being bent nearly at right angles at *p*, so that when
90 the band is wound onto the former the plate will lie flat over the end of the same.

In the use of my improvement, the band being wound onto the drum R, the end 17 of the veneer or blank S, of which the body of the box is formed, is passed under the plate U and
95 inserted beneath the guard-plate *z*, as shown in Fig. 4. The crank N is then turned, causing the gear K and former L to revolve, as indicated by the arrow, and the blank to be wound around the former, in a manner which
100 will be readily obvious without a more explicit description. As the former revolves,

the blank is first grasped between the narrow plate U and the end 12, and then bent downwardly onto the side 13 by the plate V; then onto the end 14 by the plate W; next onto the side 15 by the plate F; and, finally, onto the end 12 by the plate Y, the free end 16 of the blank overlapping its opposite end, 17, after which the ends 16 and 17 are attached by nailing, the nails being driven through both ends onto the plate *i*, by which they are clinched. After the two ends of the veneer or blank S are nailed, as described, the pawl *x* is raised, and the counter-balance *d* winds the band from the former L onto the drum R. The lower end of the outer link *h* is then disconnected from the former, being detachably connected thereto at *n*, and the veneer or body of the box is removed, after which the link is again jointed to the former and another strip of veneer inserted, preparatory to repeating the operation.

The plate U and plate Y are respectively of such a width that when both are pressing on the veneer over the end 12 of the former the end will not be entirely covered thereby, a sufficient space being left between these plates for nailing the ends 16 and 17 of the blank. By curving the sides and ends of the former, as shown and described, and constructing the plates U V W F to conform thereto, the sides and ends of the body of the box are bent inwardly and prevented from bulging after the body is removed from the former, as is the case when a former is used having straight sides and ends, the tendency of the blank being to assume a circular form after its ends are connected. The curved ends and sides of the former also subserve another important purpose in enabling the body of the box to be readily removed from the former when released from the pressure of the band, its curved sides and ends springing outwardly, and, assuming a straight position, thereby increasing its circumference, reducing the bearing-surfaces or friction between the parts, and permitting the body to be easily slipped from the former.

In Fig. 2 a former, drum, and band designed for use in making round boxes is shown, the former 30 being provided with two hinged segments, 31 and 32, which open outwardly, as shown by the dotted lines, the free end of either segment being grooved, as shown at 33. A flat bail or clamp, 34, is jointed to the free end of the segment 32, and beneath this there is a nailing or clinching plate, 35. The drum 36 corresponds in shape and size with the former 30, and the band connecting them is constructed on substantially the same principles as the band T.

In the use of the device shown in Fig. 2, one end of the veneer or blank S is inserted beneath the bail 34, and the flat key 37 driven into the grooves 33, thereby separating the segments and slightly increasing the diameter of the former, after which the blank is wound

onto the former by means of the band until its ends overlap, when they are nailed together on the plate 35. The key 37 is then withdrawn from the grooves 33, to reduce the diameter of the former, and the blank removed in substantially the same manner as already described for the rectangular former L.

I do not confine myself to using formers of any special shape, as they may be round, rectangular, square, hexagonal, octagonal, or of any other shape corresponding with the box it is desired to produce. Neither do I confine myself to the use of a counter-balance for automatically winding the band onto the drum, as this may be accomplished by means of a spring or in any other suitable manner. The former may also be operated by other mechanism than that shown, if desired, without departing from the spirit of my invention.

The drum R may also be so disposed as to obviate the necessity of bending the links *b*, and the plate *z* may be omitted, although I deem it preferable to use it.

Having thus explained my improvement, what I claim is—

1. In a box-machine, a former corresponding, approximately, in its outlines with the body of the box to be formed, and on which the blank is wound, a band for bending the blank around the former, said band consisting of a series of jointed plates having bearing-surfaces corresponding obversely with the sides and ends of the former, a drum for taking up or winding the band from the former after the blank is bent, and operative mechanism, substantially as set forth.

2. In a box-machine, the former L, provided with the guard-plate *z* and nailing or clinch plate *i*, in combination with the belt T and means, substantially as described, for bending the blank around the former and holding the same while being nailed, substantially as specified.

3. In a box-machine, the link *h*, in combination with the narrow plate U, belt T, and former L, said link being detachably jointed to said former to permit the blank to be removed therefrom, substantially as set forth.

4. In a box-machine, the band T, composed of hinged plates, and having the links *b* bent as shown at *p*, to cause the plate Y to force the end 16 of the blank down into proper position to be nailed to the end 17, substantially as specified.

5. In a box-machine, the band T, provided with the narrow plates U Y, adapted to press the ends of the blank S down onto the end of the former and leave a space between the plates for nailing the ends, in combination with operative mechanism for said former and band, substantially as specified.

6. In a box-machine, the drum R, mounted on the shaft Q, in combination with the band T, and means for automatically winding said band onto said drum from the former L when

the former is released, substantially as set forth.

7. In a box-machine, the former 30, provided with the hinged segments 31 and 32, in combination with the drum 36, means for expanding the segments to increase the diameter of the former, a band for bending the blank around the former, and a bail, 34, for securing the end of the veneer or blank, substantially as set forth.

8. In a box-machine, the former 30, provided with the bail 34, for securing the end of the veneer, and nailing-plate 35, in combination with means for bending the blank around the former, and means for expanding the former, substantially as specified.

9. In a box-machine, a former on or around which the blank is wound, a band for bending the blank around the former, a drum for receiving the band from the former, a weight for turning the drum and putting a strain on the band, a shaft and gearing for turning the former and winding the band onto the same, and a ratchet or retaining mechanism for the shaft, combined and arranged to operate substantially as set forth.

JEREMIAH A. PAIGE.

Witnesses:

FRANCIS H. WELLS,
EVERETT B. HUSE.