

Jan. 3, 1933.

G. BELLMANN

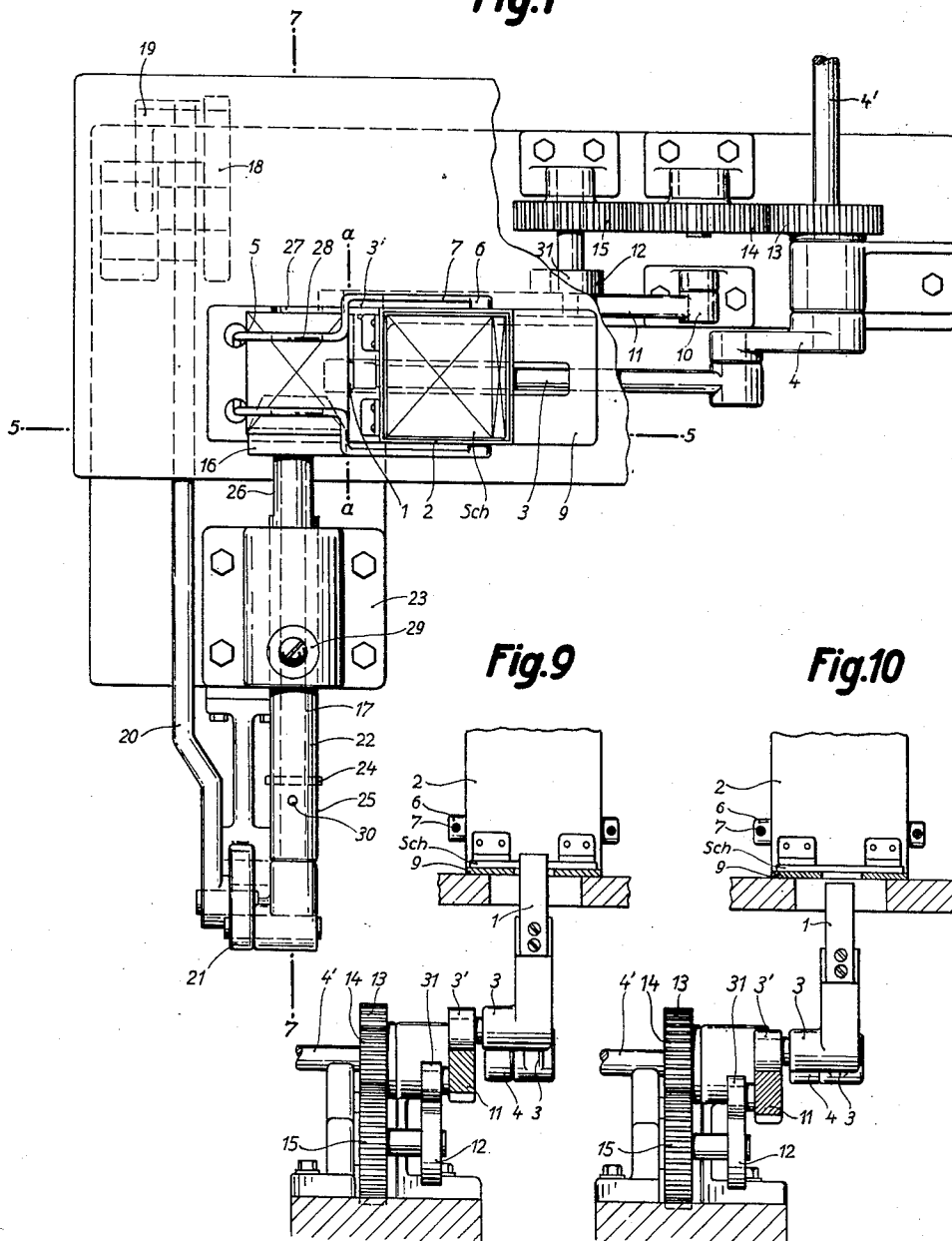
1,893,389

APPARATUS FOR ERECTING BOX SHELLS

Filed July 7, 1931

3 Sheets-Sheet 1

Fig.1



Inventor:
G. Bellmann
by *E. F. Mendenhall*
Att'y

Jan. 3, 1933.

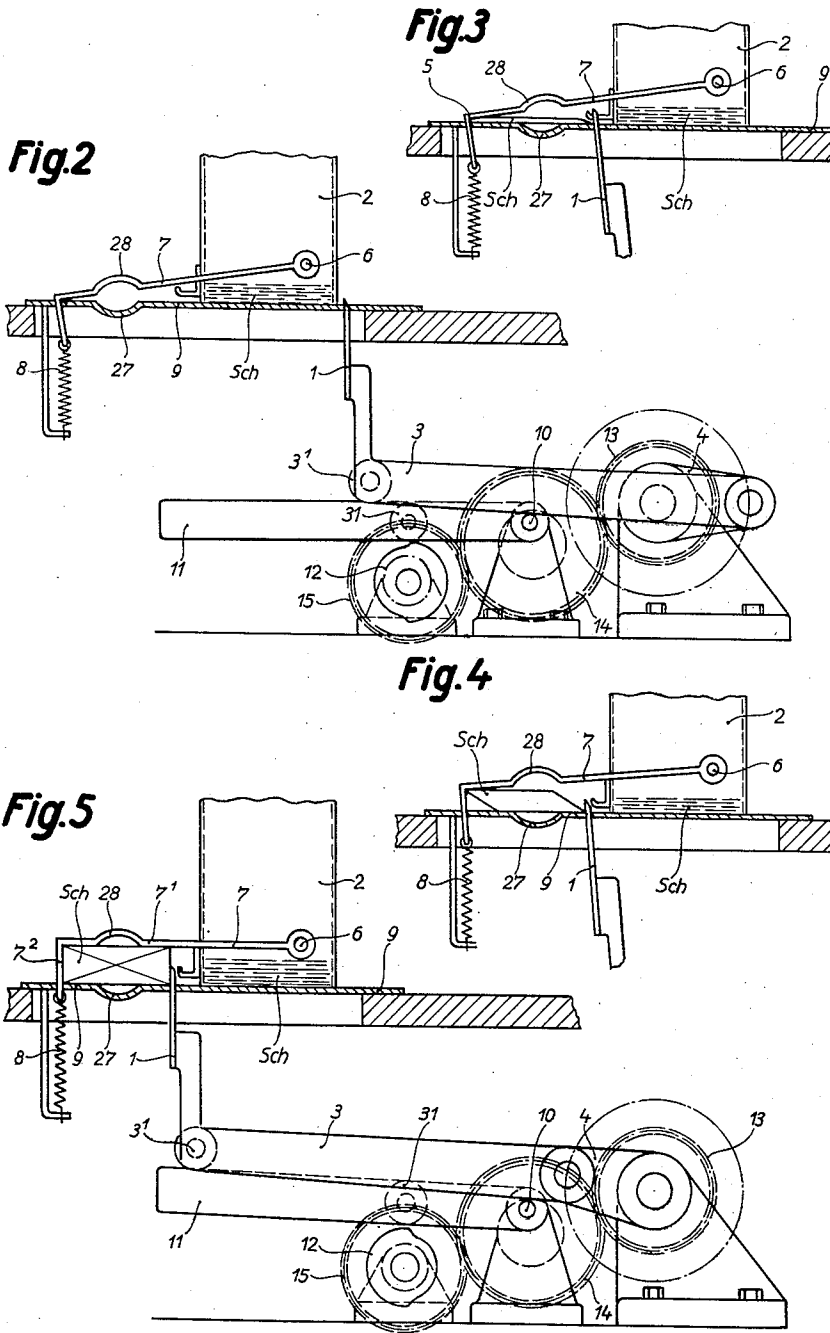
G. BELLMANN

1,893,389

APPARATUS FOR ERECTING BOX SHELLS

Filed July 7, 1931

3 Sheets-Sheet 2



Inventor:
G. Bellmann
by E. F. Hendrioth
Att'y

Jän. 3, 1933.

G. BELLMANN

1,893,389

APPARATUS FOR ERECTING BOX SHELLS

Filed July 7, 1931

3 Sheets-Sheet 3

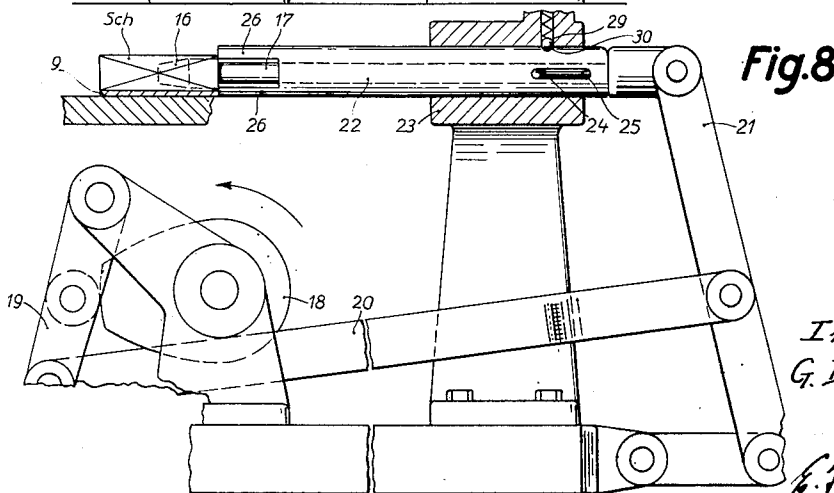
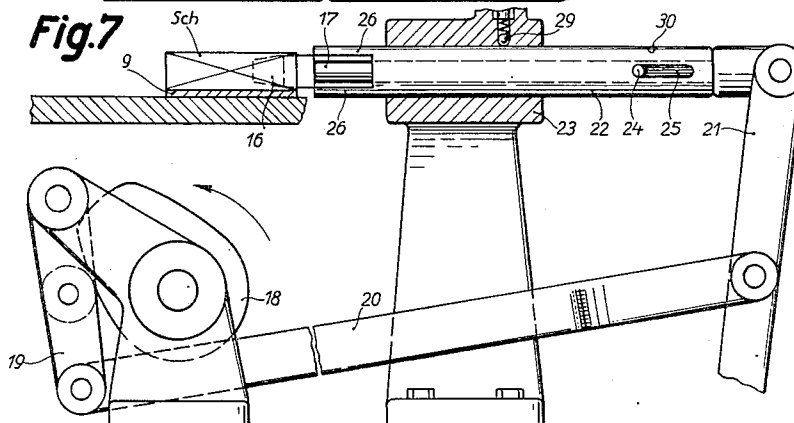
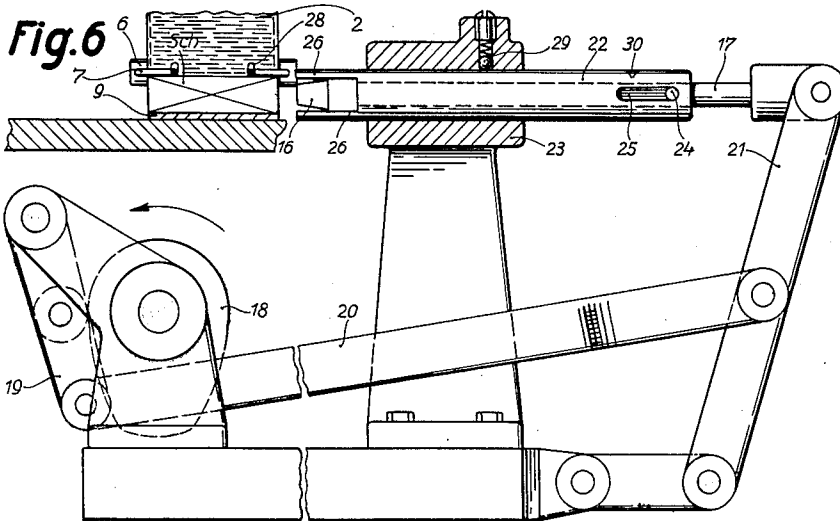


Fig.8

Inventor:
G. Bellmann

64
E. F. Hendrath
Atty

UNITED STATES PATENT OFFICE

GEORG BELLMANN, OF DRESDEN, GERMANY, ASSIGNOR TO "UNIVERSELLE" CIGARETTENMASCHINEN-FABRIK, J. C. MULLER & COMPANY, OF DRESDEN, GERMANY

APPARATUS FOR ERECTING BOX SHELLS

Application filed July 7, 1931, Serial No 549,299, and in Germany December 11, 1930.

It is well known that drawer and shell boxes consist of a shell part and a drawer part. The shell part is generally made by a machine in such manner that a tubular structure provided with the corresponding four longitudinal scored lines is produced and from this structure separate strips of the length of the drawer part are separated. In order that these flat strip structures of the drawer part can be inserted, the shell part must be erected or opened. Numerous proposals have been made to enable this to be done mechanically. At this point it is worthy of notice that a device for erecting box shells is known in which the flat shell is thrust against a notch and thereby opened.

In the new device the shell is also thrust against a notch formed in a lever and thereby opened; but the lever is mounted for movement transversely to the forward direction of the opening in such manner that lever and notch can follow the edge of the shell, which rises from the table surface under the feeding pressure and engages in the notch, until the complete erection of the shell has taken place.

The notch forms the end of an abutment surface which limits the raising of the shell to the fully opened position.

The drawer part must now be inserted in the erected shell. For this it is necessary for the shell to be conveyed to the position where the insertion of the drawer part takes place. According to this invention the shell is conveyed by a plunger arranged displaceably transversely to the forward direction of the opening of the shell in such manner that after completion of the opening of the shell it can enter into the opened shell, carry it along and convey it to the position where it is united with the drawer part. The plunger is arranged in a casing so as to be displaceable to a limited extent, whereby the member for advancing the casing seizes the plunger first displacing it so that it enters the opened box shell, and then the plunger carries along the casing, the edge of which rests against the corresponding end of the shell fixed round the plunger, so that on reaching the position where the drawer part is to be introduced the

plunger can be withdrawn by itself, while the opened shell during the introduction of the drawer part finds an abutment on the shell.

Fig. 1 of the annexed drawings is a plan of an embodiment of the invention.

Figs. 2-5 show the means for raising the box shell, in vertical longitudinal section along the line 2-2 of Fig. 1 in four successive working positions.

Figs. 6-8 show a side view of the means for the further conveyance of the raised shell, partly cut away along the line 7-7 of Fig. 1.

Figs. 9 and 10 are sections on the line a-a of Fig. 1 in two different working positions.

The member 1 which removes the horizontally disposed shells from a magazine 2, consists of a plate attached to the angular crank rod 3, and is reciprocated by means of the crank 4. The front edge of the part of the shell engaged by the plate 1 strikes against the notch 5 (Fig. 3) of the rocking lever 7 pivoted at 6 (Fig. 3). The plate 1 now advances and erects the shell (Fig. 4). In this operation the rocking lever 7 is lifted against the action of its spring 8 until the shell is completely erected (Fig. 5). At the same time the plate 1 rises over the surface of the table 9, so that the erected shell is held between four surfaces 1, 7', 7'', 9 forming a rectangle. The raising of the plate 1 is brought about by the lever 11 pivoted at 10, on which lever the roller 3' of the crank rod 3 rests; this lever being raised by means of a cam 12. The latter is driven by the crank shaft 4' through the gear wheels 13, 14, 15, (see Figs. 2, 5, 9 and 10).

As soon as the shell has been completely erected, the conical plungers 16 is thrust therein. The latter is mounted on a rod 17 and is actuated by a cam 18 through a link mechanism. The rod 17 and the plunger 16 are mounted in the casing 22 so as to be displaceable to a limited extent. These in their turn are guided in a straight line in a bracket 23.

First of all the plunger 16 moves forward alone until the stop 24 of the rod 17 comes into contact with the other end of the slot 25 provided in the casing 22 (Fig. 7). From

now onwards the plunger and the casing move together (Fig. 8). The two tongues 26 forming the front end of the casing rest against the edges of the raised shell and thrust it, as shown in Fig. 8, to the left. In order to render possible the forward movement of the tongues a recess 27 is provided in the table 9 and in the rocking lever 7 a recess 28.

After the casing 26 has reached its limit of movement, a ball 29 provided in an opening in the bracket 23 and under the influence of a spring, enters a recess 30 in the casing, so that the casing is secured flexibly. At this moment, by means not shown, the drawer part is introduced in known manner into the shell, and at the same time the plunger is withdrawn from the shell. The casing 22 is, however, secured flexibly, until the pin 24 comes into contact with the rear end of the slot 25. Thus the tongues 26 can during this time serve as abutments for the shell which is easily pressed to the right by the introduction of the drawer part (Fig. 8).

Having thus described the nature of the said invention and the best means I know of carrying the same into practical effect, I claim:—

1. Apparatus for erecting box shells, comprising a lever containing a notch against which the flat shell is thrust, and thereby opened, the said lever being movable transversely to the opening movement so that the notch can follow the edge of the shell, a table on which the shell rests, and means for applying feeding pressure to raise the shell from said table so that the shell engages the notch, until the complete erection of the shell is accomplished.

2. Apparatus according to claim 1 in which the lever containing the notch forms an abutment surface which limits the erection of the shell to the exact opened position.

3. Apparatus according to claim 1 in which the lever is rockably mounted and has a rectangular abutment surface, and a spring for drawing the lever down to the table surface.

4. Apparatus according to claim 1, in which the pressure applying means comprise a controlled plate which passes through the table surface, a magazine containing shells, said plate engaging with the lowest shell in a magazine and removing it therefrom, advancing it to the notch, and then by rising over the surface of the table and finally by coming into a vertical position places the opened shell in the correct position.

5. Apparatus according to claim 1, characterized in that a plunger is arranged displaceably transversely to the forward direction of the shell opening movement, so that on the completion of the opening of the shell it can enter the opened shell, carry it along, and conduct it to the position where the shell is united with a drawer part.

6. Apparatus according to claim 1 com-

prising a casing, a plunger disposed in said casing for limited displacement transversely to the forward direction of the shell opening movement, so that on the completion of the opening of the shell it can enter the open shell, carry it along and conduct it to the position where the shell is united with a drawer part, a member for advancing the casing, and adapted to seize the plunger displacing it so that it enters the opened box shell, and then carrying the casing along, one edge of the latter resting against the corresponding ends of the shell fixed on the plunger, so that on reaching the position where the drawer part is introduced, the plunger can be withdrawn by itself, while the opened shell finds an abutment on the casing during the introduction of the drawer part.

7. Apparatus according to claim 1 comprising a casing, a plunger disposed in said casing for limited displacement transversely to the forward direction of the shell opening movement so that on the completion of the opening of the shell it can enter the open shell, carry it along and conduct it to the position where the shell is united with a drawer part said casing ending in the vicinity of the plunger in rigid tongues for the passage of which recesses are provided in the table surface and recesses are provided in the lever having the notch.

In testimony whereof I have signed my name to this specification.

GEORG BELLMANN.