

No. 723,200.

PATENTED MAR. 17, 1903.

G. W. HANNAN & C. A. ROBINSON.
AUTOMATIC PACKING APPARATUS.

APPLICATION FILED APR. 5, 1901.

NO MODEL.

2 SHEETS—SHEET 1.

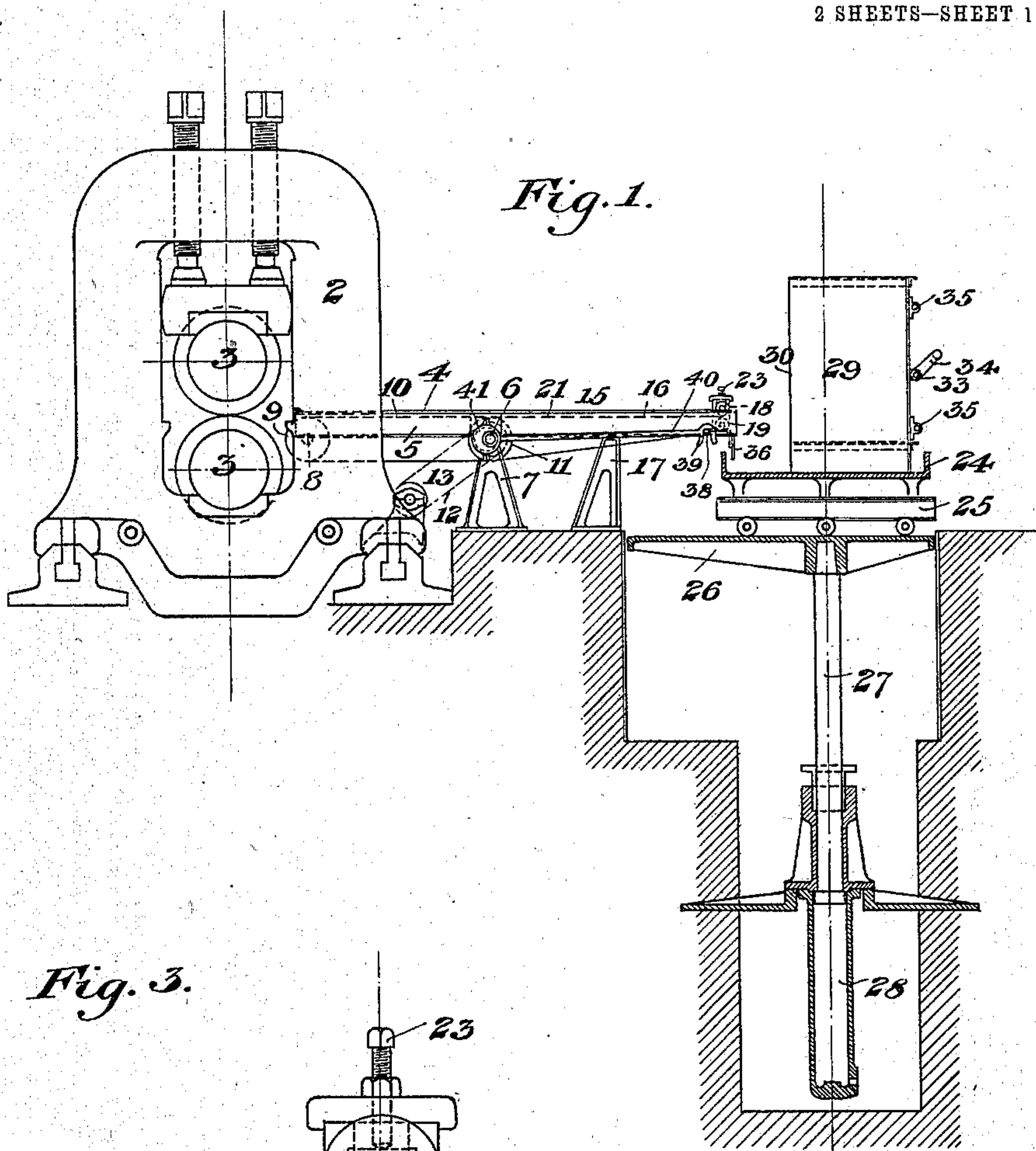
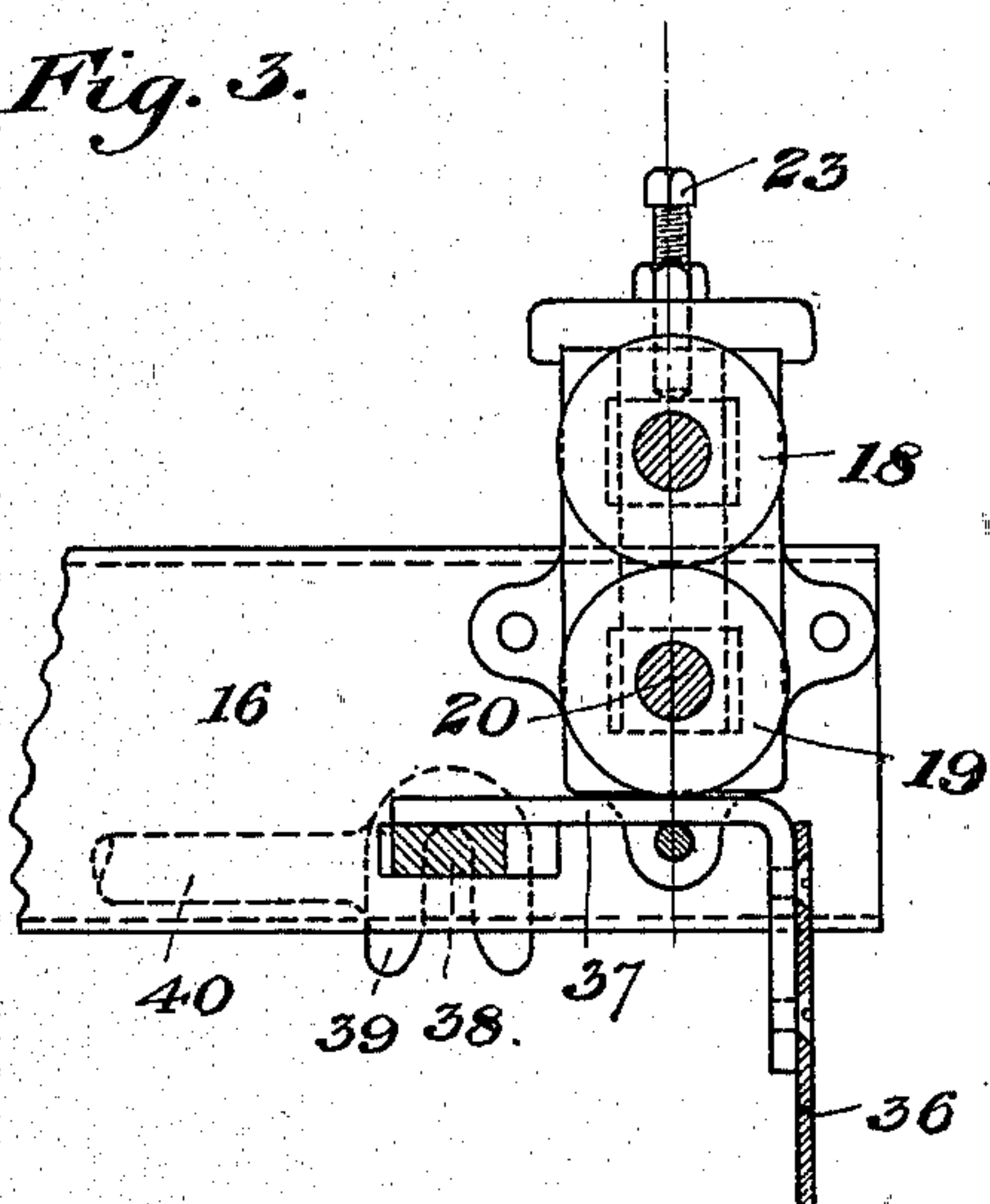


Fig. 3.



WITNESSES

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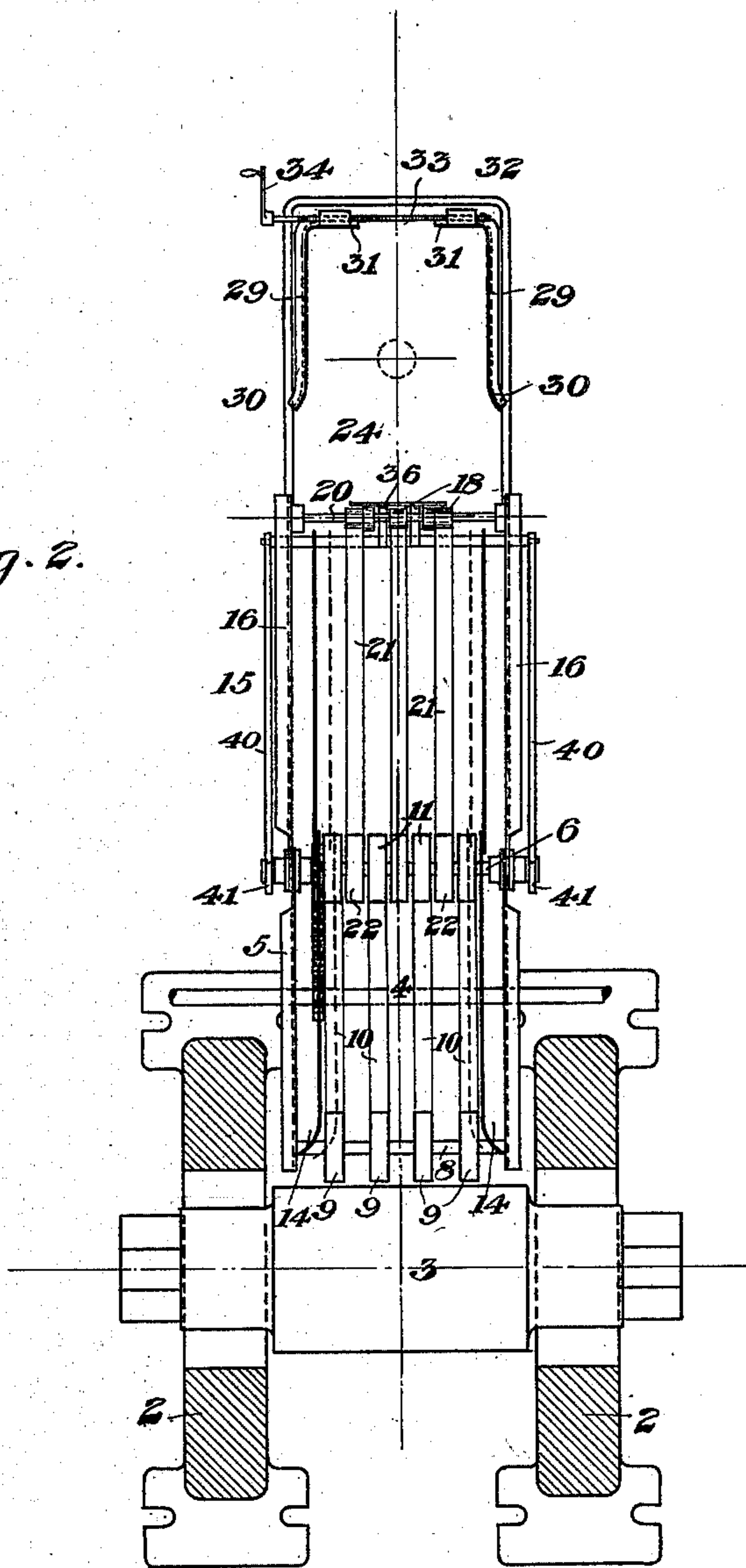
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2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE W. HANNAN AND CECIL A. ROBINSON, OF WHEELING, WEST VIRGINIA.

AUTOMATIC PACKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 723,200, dated March 17, 1903.

Application filed April 5, 1901. Serial No. 54,520. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. HANNAN and CECIL A. ROBINSON, of Wheeling, Ohio county, West Virginia, have invented a new and useful Automatic Packing Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional side elevation showing one form of our improved apparatus in connection with a pair of cold-rolls. Fig. 2 is a top plan view of the same with the cold-rolling mill partly in section; and Fig. 3 is a detail view, on a larger scale, showing a vertical section of the discharging-rollers and edging mechanism.

Our invention relates to the arranging of plates or sheets in packs, and particularly to the packing of black sheets or plates into annealing-stands as they emerge from the cold-rolls, though the device may be adapted for other purposes. Heretofore this operation has been carried out by hand and has consequently been slow and expensive.

Our invention greatly reduces the expense and time necessary; and it consists of a feeding device in connection with a stacking platform or support, one of these parts being movable vertically relatively to the other in order to allow for the increased height of the pack as the sheets are inserted upon it.

It further consists in the above combination, together with a temporary stacking-guide, also in a device for alining the edges of the sheets in the pack, and, further, in the construction and arrangements of the parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, 2 represents a cold-rolling mill in which the cold-rolling of the black sheets or plates is completed. The sheet emerges from the rolls 3 3 of this mill and is moved over the fore plate to feeding apparatus, which we have shown as consisting of a table provided with endless carriers, though any suitable feeding apparatus may be substituted therefor. In the form shown the table is divided into two sections, and the section nearest the rolls consists of a swinging frame 4, having side members 5 5, which are

hinged to a shaft 6, mounted in stationary bearings on standards or supports 7. This frame is loosely mounted on the shaft, so that it may swing back to give access for polishing the rolls, and when swung down into operative position its forward end rests on the fore plate or other support on the mill. At the front end of the frame 4 is loosely mounted a shaft 8, carrying pulleys 9. Belts 10 extend over these pulleys and over similar pulleys 11, secured to the shaft 6, which shaft is continuously driven by the belt or chain connections 12, extending from the lower driven shaft 13. The table portion 4 is provided with bell-mouth guide-plates 14 at each side, which hold the black plates in proper position on the belts.

The rear half of the table consists of a frame 15, having side members 16, which are loosely supported at one end on the shaft 6 and are intermediately carried on standards 17. At the front end of this section are provided two sets of discharge-rollers, the lower rollers 19 of each set being secured to a shaft 20, which is rotated by belt connections 21, extending from pulleys 22, located on the shaft 6 and between the pulleys 11 thereon. The upper roller 18 of each set of discharge-rollers is rotated by friction, and its pressure on the lower roll may be adjusted by set-screws 23. The pass between these sets of rolls is in line with the belts 21, so that as the sheets are moved along the belts they are seized by these rollers and discharged in a positive manner upon the annealing-stand 24. The legs of this annealing-stand rest upon a wheeled truck or platform 25, which is carried upon a table 26, secured to the upper end of a ram 27. The ram-cylinder 28 is located in a suitable pit beneath the table 26, and its control-valve is placed at any convenient point within the reach of the operator.

Upon the annealing-stand 24 is set a stacking guide or frame consisting of vertically-extending sides 29, having outwardly curved or flared mouths 30 to receive and guide the sheets into place. At their rear ends these sides are bent at right angles to form back flanges or stop portions 31, having innerly screw-threaded blocks 32, through which extends a shaft 33, provided with right and left

hand screw-threads. These screw-threads interfit with the corresponding threads in the lugs or blocks of the frame parts, which may be adjusted toward and from each other by turning the handle 34. To hold the two parts of the frame in correct position, we may provide two guide-rods, which extend through guides 35 on each half of the packing-frame and hold the parts in proper position during adjustment.

In order to bring the edges of the successive sheets into alinement as they are deposited on the annealing-stand, we provide a central flat-faced pusher 36, which is secured by bracket 37 to a transverse bar 38, arranged to slide horizontally on the supports 17. At the ends of this bar are trunnions which are engaged by the hooked ends 39 of eccentric-rods 40, connected to eccentrics 41 on the shaft 6. As the shaft 6 is rotated the pusher 36 will be reciprocated, and will thus push the successive plates into proper place in the packing-frame.

In the operation of our apparatus the sheets as they emerge from the cold rolls are moved by the belts or other endless carriers along the table into the bite of the discharging-rolls and by these rolls are ejected and forced forwardly into the packer-frame resting on the annealing-stand. The sheets are guided by the flaring mouth of the frame, and as the pile grows in height the operator lowers the table 26 by operating the valve of the ram. As the sheets are moved into place, the pusher 36 strikes their front edges and forces them back, so that their edges are brought into alinement with each other. After the pack is of the desired height the ram is lifted, the packer-frame is removed, and an annealing-cover set over the pack, and the annealing-stand 24 is then moved to the annealing-oven, in which it is inserted with its covered pack of plates. Another annealing-stand is then placed upon the truck 25 and the operation continues as before.

The advantages of our invention result from the automatic and rapid packing or stacking of the plates or sheets. The handling of the plates is done away with and an accurate pile obtained. The parts are ad-

justable, so that the apparatus may be arranged for different sizes of plates, and the operation goes on continuously and rapidly.

Instead of moving the support for the pile or pack we may move the feeding apparatus either by swinging the table or by moving the feeding device vertically. The conveyer may slope from the cold rolls toward the packing-stand or in the opposite direction. The device for alining the edges may be widely varied or may be dispensed with, and many other changes may be made in the form and arrangement of the parts without departing from our invention.

We claim—

1. In automatic sheet-packing apparatus, a feeding device, a vertically-movable platform or support, a removable pack-carrier having side guides, said carrier resting removably on the platform and removable with the pack, and mechanism for moving both the platform and the carrier vertically; substantially as described.

2. In sheet-packing apparatus, a horizontally-movable truck or platform, an annealing-stand thereon, feeding mechanism leading from the cold rolls to the stand, and mechanism for moving the truck and feed mechanism vertically relatively to each other; substantially as described.

3. In sheet-packing apparatus, a temporary pack-guide comprising parallel vertically-extending sides with rear stop portions for the plates, and laterally-flaring front ends and mechanism for adjusting the sides toward and from each other; substantially as described.

4. In sheet-packing apparatus, a support, mechanism for moving the support vertically, a horizontally-movable truck on the support, a removable annealing-stand resting on the truck, and sheet-feeding apparatus arranged to form a pack upon the annealing-stand; substantially as described.

In testimony whereof we have hereunto set our hands.

GEORGE W. HANNAN.
CECIL A. ROBINSON.

Witnesses:

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JNO. HUGUS.