

No. 610,252.

Patented Sept. 6, 1898.

E. B. WEED.

MACHINE FOR PAPERING AND PILING ARTIFICIAL HONEYCOMB FOUNDATIONS.

(Application filed Nov. 5, 1897.)

(No Model.)

3 Sheets—Sheet 1.

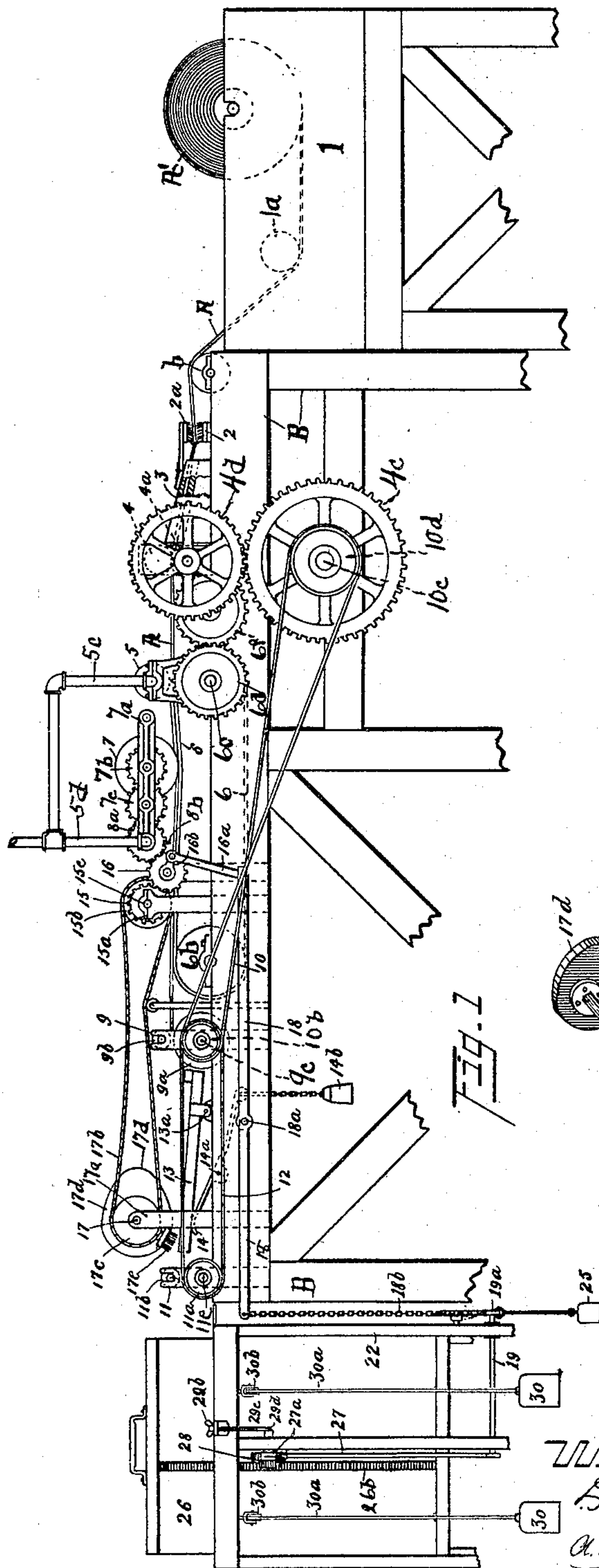


FIG. 1

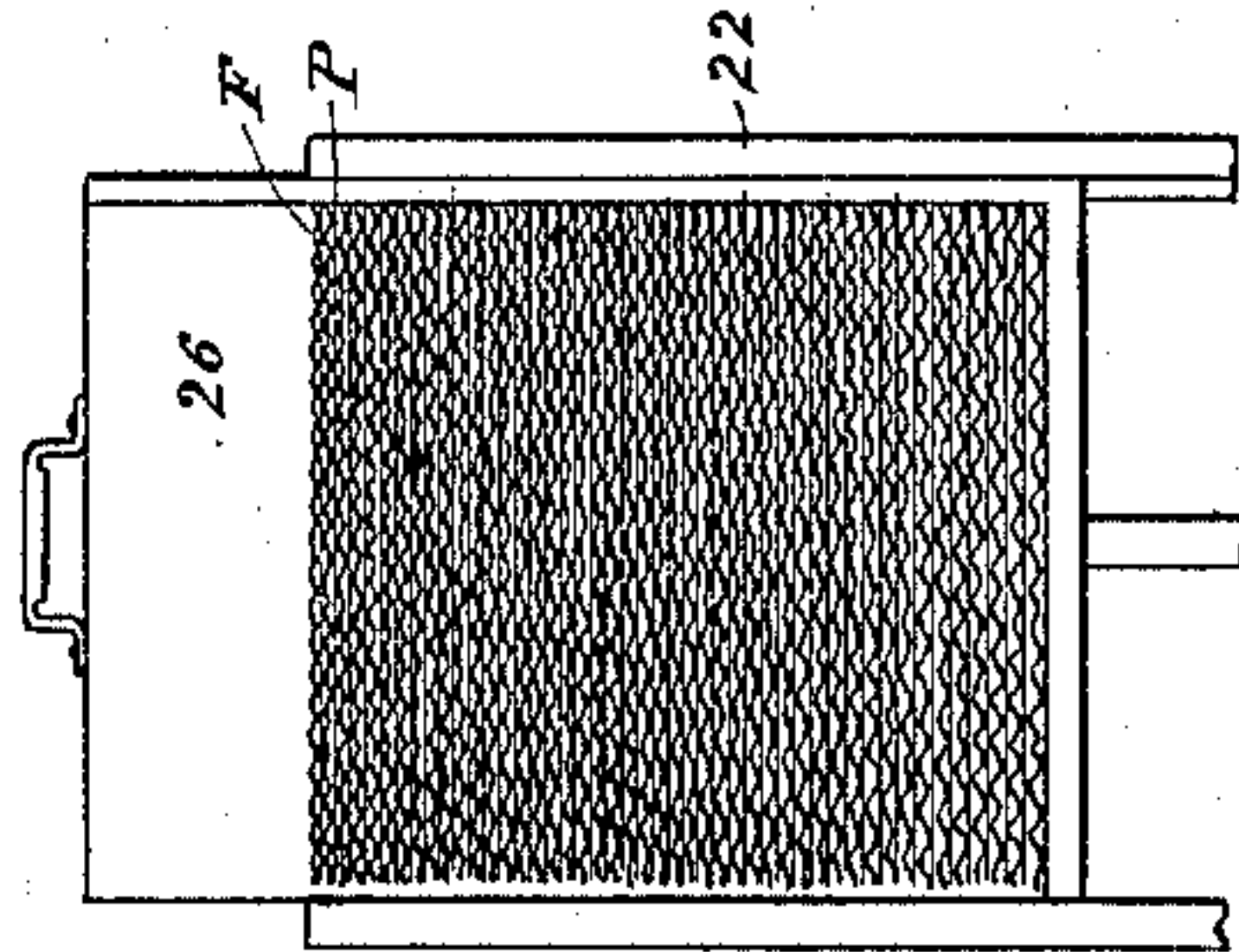


FIG. 7

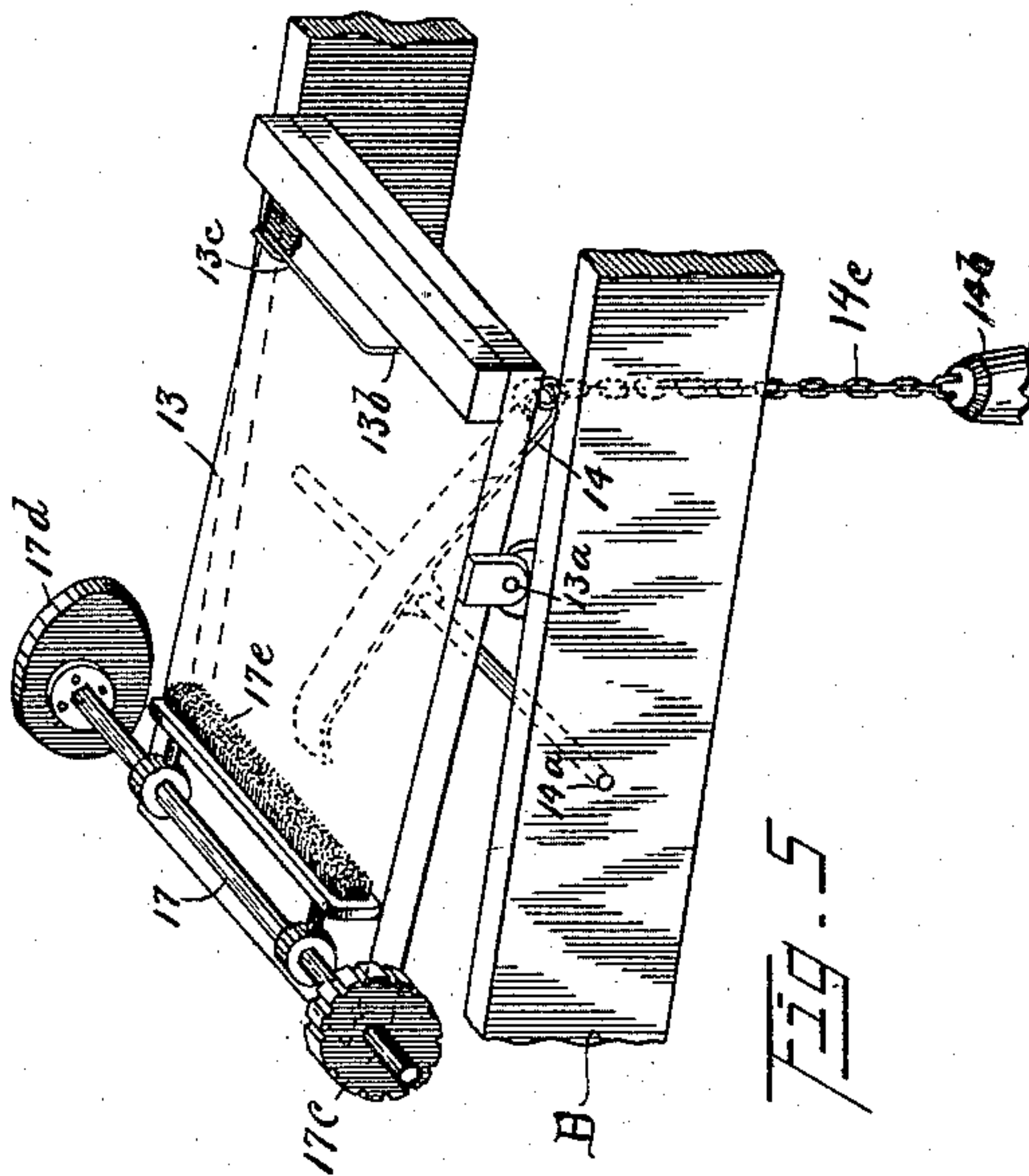


FIG. 5

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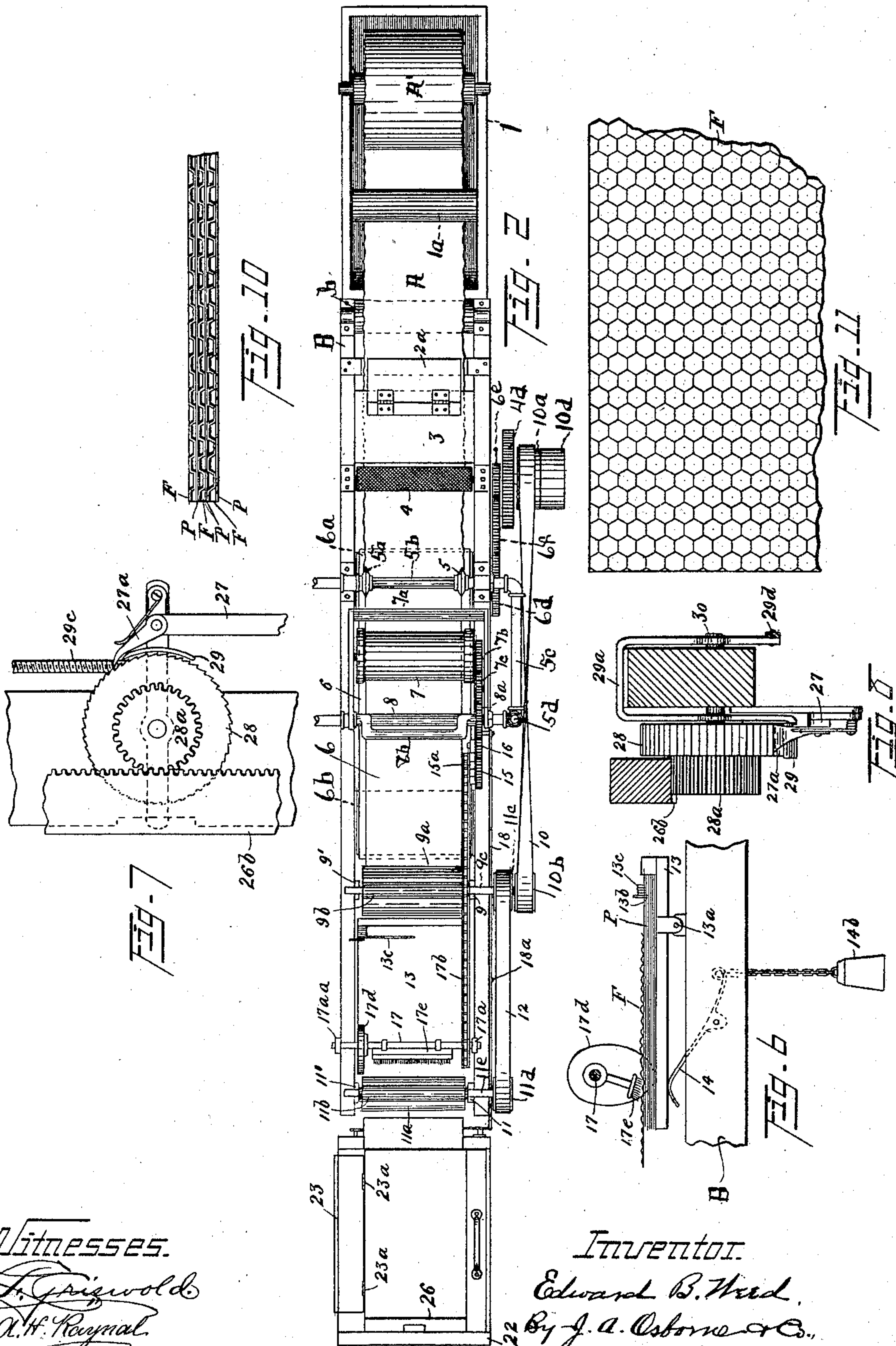
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(No Model.)

3 Sheets—Sheet 2.



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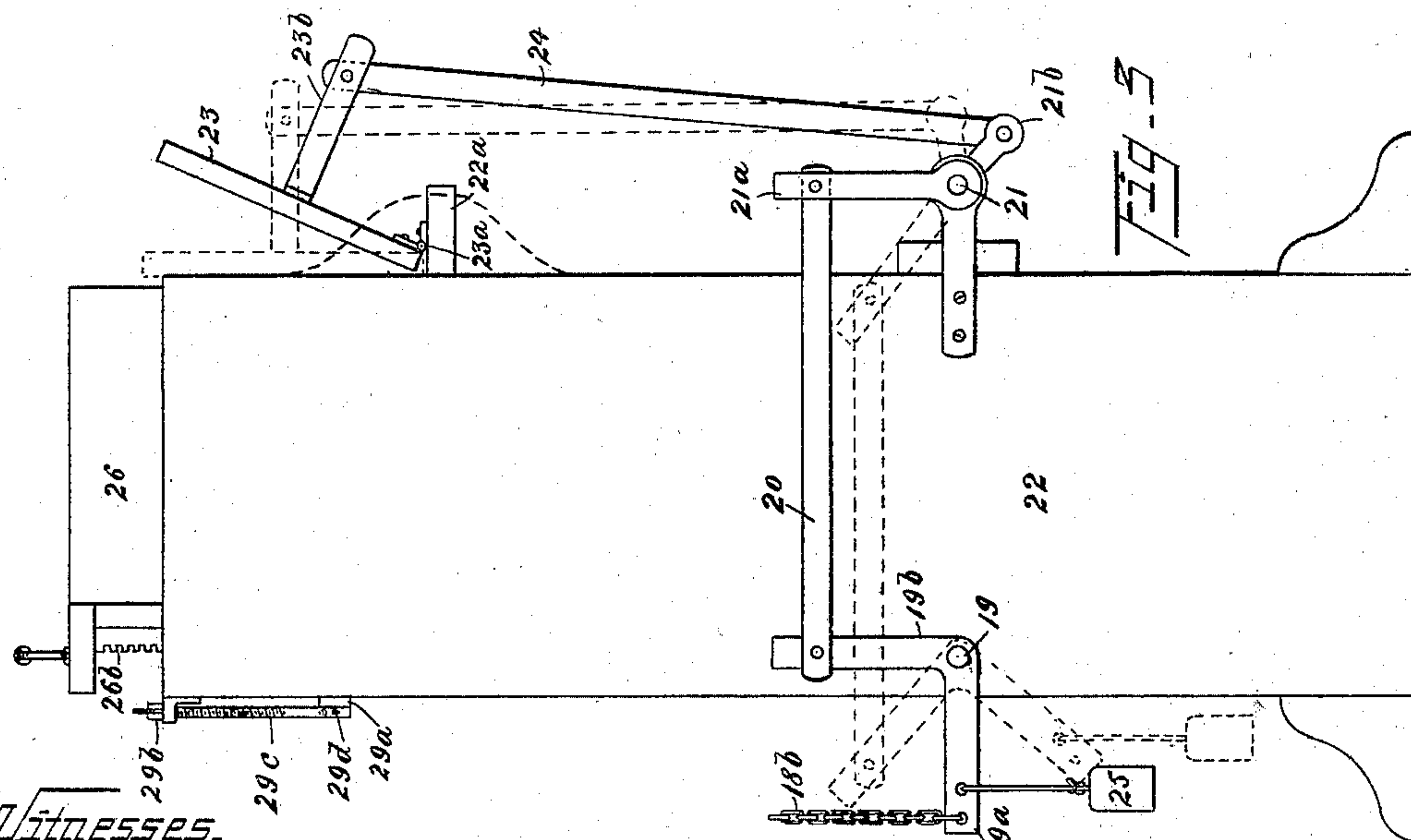
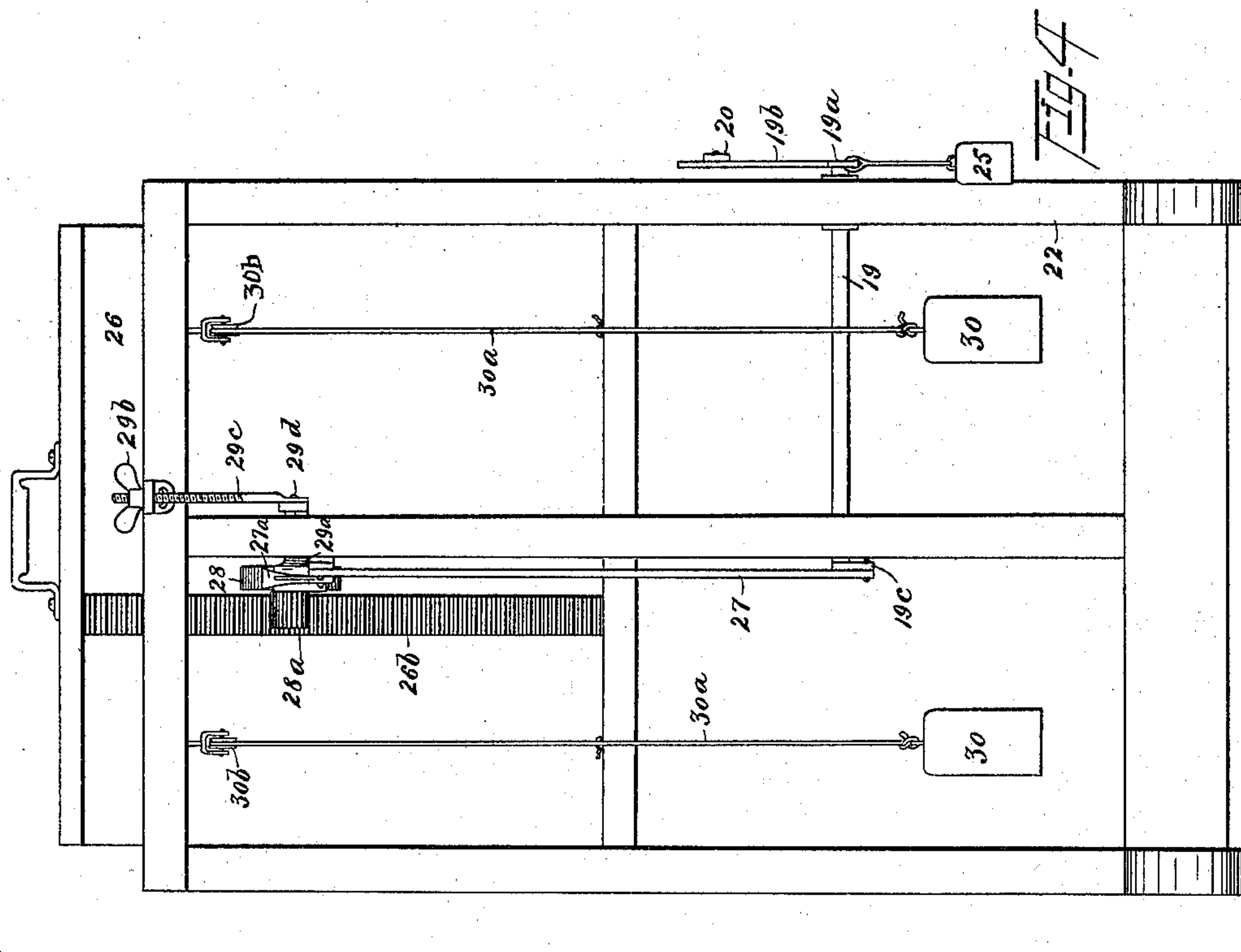
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(Application filed Nov. 5, 1897.)

(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

EDWARD B. WEED, OF MEDINA, OHIO, ASSIGNOR TO THE A. I. ROOT COMPANY, OF SAME PLACE.

MACHINE FOR PAPERING AND PILING ARTIFICIAL HONEYCOMB-FOUNDATIONS.

SPECIFICATION forming part of Letters Patent No. 610,252, dated September 6, 1898.

Application filed November 5, 1897. Serial No. 657,488. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. WEED, a citizen of the United States, residing at Medina, in the county of Medina, State of Ohio, have
5 invented certain new and useful Improvements in Machines for Papering and Piling Artificial Honeycomb-Foundations, of which the following, with the accompanying drawings, is a full, clear, and exact specification.

10 My invention relates to a new and novel means for piling artificial honeycomb-foundations with interposed sheets of paper for packing and other purposes.

The objects of the invention are to provide
15 means for placing sheets of paper between the sheets of artificial honeycomb-foundations and for piling the said artificial honeycomb-foundations, with their interposed sheets of paper, in suitable piles to facilitate handling
20 and packing the same, to keep the artificial honeycomb-foundations separated and secure against adhesion between them, and to prepare such foundations for safe handling and shipment.

25 Other objects of the invention will be apparent from the description thereof.

Reference is here made to the claims for a complete statement of the nature of my invention.

30 In the drawings, Figure 1 is a rear side elevation of my improved machine. Fig. 2 is a plan view. Fig. 3 is an inner end view of the piler. Fig. 4 is a rear elevation of the piler. Fig. 5, Sheet 1, is a perspective view of the
35 papering device detached. Fig. 6, Sheet 2, is a side elevation of the papering device with paper thereon and an artificial honeycomb-foundation partly moved from it. Fig. 7, Sheet 2, is a side view of the ratchet mechanism used for lowering the pile. Fig. 8 is a
40 plan view of the ratchet mechanism. Fig. 9 is an elevation of the piling-box filled with artificial honeycomb-foundation and interposed sheets of paper. Fig. 10 is an enlarged side view of broken sections of artificial honeycomb-foundation with interposed sheets of paper, and Fig. 11 is an enlarged plan of a broken section of an artificial honeycomb-foundation.

50 Similar characters of reference designate

similar parts in the drawings and specification.

In practicing my invention the work may be done by any suitable mechanism adapted to place the sheets of artificial honeycomb-
55 foundation in order upon sheets of paper, allowing the sheets of paper to adhere to the sheets of artificial honeycomb-foundation and then piling them as described. It is convenient to have a number of sheets of paper
60 in a pile and place the artificial honeycomb-foundation on top thereof. Only the top sheet will adhere. In preparing the artificial honeycomb-foundations and the sheets of paper preparatory to be piled any known means
65 may be employed. I have described herein, however, a means for favosing sheets of wax and cutting them to a required size in making artificial honeycomb-foundations, as well as the present invention for piling the arti-
70 ficial honeycomb-foundations with interposed sheets of paper. The machine described herein for making the artificial honeycomb-foundations is that described in United States Letters Patent No. 598,060, dated January
75 25, 1898. This machine forms no part of the present invention, except as a part of it may perform its usual functions and at the same time serve as an element of the machine herein described for papering and piling the
80 artificial honeycomb-foundations. The latter machine is well adapted to be used in connection with the said artificial-honeycomb-foundation machine, though it may be used with any form of an artificial-honeycomb-
85 foundation machine or independently. The mechanism herein described for papering and piling the honeycomb-foundations is the preferred embodiment of my present invention.

I will first briefly describe the favosing or
90 artificial-honeycomb-foundation machine, next describe my papering and piling machine and its operation in detail, and then describe the connection of the papering and piling machine with the favosing-machine.
95

A' is a roll of sheet-wax that is partially immersed in a tank 1. The sheet of wax A from the roll A' passes under the roller 1^a and then over the roller b, that is journaled upon the supporting-frame B. The function of the
100

roller *b* is to prevent the sheet of wax from dragging over the edge of the tank and the machine-frame and injuring the sheet. The sheet of wax passes from the roller *b* between the brushes 2 and 2^a and thence through the guide 3 and between the die-rolls 4 and 4^a. The die-rolls are driven from the shaft 10^c through the gears 4^c and 4^d. Power is communicated to the machine through the pulley 10^d. From the die-rolls the sheet of wax A passes onto an endless carrier 6. Said endless carrier is an endless web of any suitable material that travels around the rollers 6^a and 6^b. Upon the shaft 6^c, on which is fixed the roller 6^a, is fixed a gear 6^d. The endless carrier is driven from the shaft of the die-roll 4^a through the pinion 6^c, the intermediate gear 6^f, and the gear 6^d.

Above the endless carrier 6 upon a pipe-shaft 5^b are fixed two circular knives 5 and 5^a, that roll in contact with the endless carrier to trim the edges of the sheet of wax. These knives are kept warm by hot water or steam passing through the pipe-shaft 5^b from the pipe 5^c.

Above the endless carrier 6 is a pipe-shaft 8, fixed to which and rotating with it is a cut-off knife 8^b. On the outer end of the pipe-shaft 8 is a gear 8^a. Hinged upon the pipe-shaft 8 is a frame 7^a, that carries a roller 7. The roller is in frictional contact with the endless carrier 6 or with a sheet of wax carried by the endless carrier. The endless carrier and the floating roller 7 together constitute a gripping device to pull the favored wax sheet from the die-rolls and prevent its adhering thereto. The cut-off knife 8^b is kept warm by hot water or steam passing through it from the pipe 5^d, that is connected with any suitable source of supply. The cut-off knife 8^b is revolved from the floating roller 7 (which is driven by friction with the endless carrier 6) through the gear 7^b, fixed to the shaft of the roller 7, the intermediate gear 7^c, and the gear 8^a.

The mechanism so far described in detail constitutes the preferred embodiment of the invention covered by said United States Letters Patent No. 598,060, dated January 25, 1898. I will now describe the preferred embodiment of my invention in mechanism for papering and piling artificial honeycomb-foundations.

Standards 9 9', attached to the machine-frame beyond the endless carrier 6, have a roller 9^a journaled thereon. This roller is driven by the crossed belt 10, traveling over the pulleys 10^d and 10^b, the first of which is fixed upon the main shaft 10^c and the second of which is fixed upon the shaft 9^c of the roller 9^a.

Journaled to the standards 11 11', that are attached to the end of the main frame B, is a roller 11^a. This roller is driven by a belt 12, that travels over pulleys 11^c and 11^d, that are fixed upon the shaft 9^c of the roller 9^a

and the shaft 11^c of the roller 11^a, respectively.

Journaled in the standards 9 and 9' above the roller 9^a is a friction-roller 9^b, and journaled in the standards 11 and 11' above the roller 11^a is a friction-roller 11^b. The roller 11^a and the friction-roller 11^b above it serve as a carrier to take the artificial honeycomb-foundations, with their adhering sheets of paper, from the pivoted paper-holder to the piler box or receptacle described herein.

Pivoted to the frame at 13^a is a paper-holder 13. Upon this pivoted paper-holder 13 are placed a number of sheets of paper P in a pile, which sheets of paper are to be interposed between the sheets of artificial honeycomb-foundation F F. The sheets of paper P P are held by the point 13^b of the spring 13^c. A weighted lever 14 is pivoted to the frame B upon a rod 14^a. One end of the lever bears against the under side of the pivoted paper-holder at a point beyond the pivot 13^a. Suspended from the other end of the lever by a chain 14^c is a weight 14^b. The action of the weight through the lever 14 elevates the forward end of the pivoted paper-holder 13 for the purpose herein stated. After a sheet of artificial foundation leaves the cut-off it is carried forward by the carrier 6 and caught between the feed-rollers 9^a and 9^b and by them is thrown onto the paper on the pivoted paper-holder 13. The forward end of the pivoted paper-holder being elevated, the friction-roller 11^b forms a stop for the sheet. A gear 15 is journaled in a standard 15^a and is in mesh with a gear 16, which is in mesh with the gear 8^a of the cut-off. A sprocket-wheel 15^b is attached to the shaft 15^c, that is driven by the gear 15 and revolves with said gear. Standards 17^a 17^{aa} are attached to the frame and form the bearings for a shaft 17 above the pivoted paper-holder 13. The shaft 17 is driven from the sprocket-wheel 15^b by a sprocket-chain 17^b and a sprocket-wheel 17^c on the shaft 17. Attached to the shaft 17 is a cam 17^d and also a brush 17^e, that serves as a carrier to remove the sheets of foundation, with sheets of paper adhering thereto, from the pile of paper on the paper-holder. In the revolution of the shaft 17 the cam 17^d forces the forward end of the pivoted paper-holder down, and the friction of the brush 17^e carries or slides the sheet of artificial honeycomb-foundation to the rollers 11^a and 11^b. The wax adheres slightly to the top sheet of paper and carries said paper with it. Tissue-paper is preferably used. The top sheet easily tears loose from the spring-point 13^b. The rollers 11^a and 11^b carry the sheet of artificial honeycomb-foundation, with the paper adhering to its under side, into the piler box or receptacle 26. The friction-roller 11^b not only aids to conduct the sheet from the apron to the piler box or receptacle, but also serves as a stop to the sheet when it is thrown onto the pivoted paper-holder. If a stationary stop

were used, the wax would adhere to it, while the action of the roller tends to throw the sheet downward and forward and prevents adhesion thereto.

5 Pivoted to the rear of the frame at 18^a is a lever 18. A link 16^a pivotally connects one end of the lever 18 with a crank 16^b on the shaft of the gear 16. The opposite end of the lever 18 is connected by a chain or long link 10 18^b with the arm 19^a of a bell-crank lever, which is attached to the rock-shaft 19. Said rock-shaft is journaled on the back of the frame 22, which supports the piler box or receptacle 26. The receptacle 26 is open in front and 15 at the inner end, as illustrated. The arm 19^b of the bell-crank lever on the rock-shaft 19 is connected, by means of the link 20, with the arm 21^a, fixed on the rock-shaft 21. Said rock-shaft is journaled in the front of the 20 frame 22. A flap 23 is hinged at 23^a to a shelf 22^a, extending out from the front of the frame 22. Rigidly attached to the flap 23 is an arm 23^b. A link 24 forms a pivotal connection between the arm 23^b and the arm 21^b, fixed to the 25 rock-shaft 21. A weight 25 is attached to the arm 19^a of the bell-crank lever on the rock-shaft 19. As the forward end of the lever 18 is depressed through the action of the crank 16^b and link 16^a, gravity will cause the arm 19^a 30 to drop, and through the arm 19^b, link 20, arm 21^a, rock-shaft 21, arm 21^b, link 24, and arm 23^b the flap 23 will be moved to a perpendicular position, as shown in dotted lines in Fig. 3. When the forward end of the lever 18 is 35 raised, the flap 23 will assume the position shown in full lines in Fig. 3, this being the position of the flap when the sheet is thrown into the piler box or receptacle. Just after a sheet of artificial comb-foundation enters the 40 piler box or receptacle 26 the flap, through the mechanism described, assumes the perpendicular position and, coming in contact with the exposed edge of the sheet of artificial comb-foundation last thrown into the 45 receptacle, causes the sheet to line up with the pile in the receptacle. Thus as each sheet enters the receptacle the pile is evened.

It is necessary to lower the box as each sheet enters it in order to keep the top of the 50 pile of artificial honeycomb-foundations and interposed sheets of paper in the piler-box below the upper side of the lower forwarding-roller 11^a. I provide for this in the following manner: Pivoted to the arm 19^c, fixed to the 55 rock-shaft 19, is a rod 27, which operates a spring-pawl 27^a, pivoted to its upper end. The pawl 27^a is adapted to engage a ratchet-wheel 28, that is journaled in the rear of the frame 22. Fixed to the ratchet-wheel 28 is 60 a pinion 28^a, which meshes with a rack 26^b, that is attached to the back of the receptacle 26. As the rod 27 is raised by the arm 19^c through the action of the rock-shaft 19 the spring-pawl 27^a engages with the teeth of the 65 ratchet-wheel and lowers the piler-box by means of the pinion 28^a, meshing with the rack 26^b. The length of throw of the ratchet-

wheel 28 is governed by a guard 29, which is fixed to a yoke 29^a, that is pivoted on the axle 30 of the ratchet-wheel. The guard 29 70 is raised or lowered by means of the thumb-nut 29^b on the screw 29^c, which is pivoted at 29^d to one arm of the yoke. It will readily be seen that the tooth of the ratchet-wheel which shall be engaged by the pawl is deter- 75 mined by the position of the guard 29, and hence the throw of the wheel is regulated by the guard. To facilitate the raising of the receptacle after the pile shall have been completed, cords 30^a 30^a are attached to the back 80 of the receptacle and passed over pulleys 30^b 30^b, attached to the frame 22, and have weights 30 30 attached to their free ends.

It will be seen that the endless carrier 6, described herein, constitutes a part of the means 85 employed to pull the favosed sheets from the die-rolls and serves as a support for the favosed sheets while the knives of the artificial honeycomb-foundation machine are cutting the sheets to a size to form artificial honey- 90 comb-foundations. While performing these functions, it also serves as a part of the papering and piling device to carry the cut artificial honeycomb-foundations to the feed-rollers 9^a 9^b, that place the foundations upon the 95 pile of papers.

The papering and piling device may be used independently of the favosing-machine herein described, in which case any desired means may be employed to place the artificial honey- 100 comb-foundations upon the pile of paper upon the pivoted paper-holder.

The operation of the parts of my present improvement has been stated in connection with the detailed description thereof, and no 105 further description of my papering and piling device is needed.

The means herein described may take on various modifications without departing from the spirit of my invention, and I do not there- 110 fore limit my claims by the detailed description given.

What I claim, and desire to secure by Letters Patent, is—

1. An artificial-comb-foundation papering 115 and piling device consisting of a receptacle for receiving sheets of foundation with adhering sheets of paper; a holder for sheets of paper; a feeder to place foundations into contact with the sheets of paper on the holder, 120 and a carrier to carry the foundations with the adhering sheets of paper to the receptacle.

2. Means for placing sheets of paper between sheets of artificial comb-foundation when piled, said means consisting of a holder 125 adapted to hold a pile of sheets of paper; means for placing sheets of artificial comb-foundation consecutively into contact with said pile of papers whereby a sheet of paper will adhere to each sheet of foundation; and 130 a carrier to remove the said foundations with the adhering sheets of paper from the pile of paper.

3. A pivoted paper-holder, a carrier for car-

rying foundations to the paper-holder, a receptacle, and a carrier to take sheets of foundation with adhering sheets of paper from the paper-holder to the receptacle.

5 4. The combination of a pivoted paper-holder for supporting sheets of paper, rollers for carrying foundations after they shall have been cut to a required size onto paper held
10 by said paper-holder, means for elevating the forward end of the paper-holder, a revolving stop at the forward end of the paper-holder, a driven shaft arranged above the paper-holder, a brush fixed to said shaft and adapted to engage the foundation-sheets, and a cam on
15 said shaft for depressing the forward end of the paper-holder, substantially as described.

5. The combination of a pivoted paper-holder having a weighted lever adapted to elevate its forward end and a spring-clamp
20 for holding sheets of paper on top of the paper-holder, with means for conveying foundations after they shall have been cut into sheets of a required size onto the paper on said paper-holder, a stop at the forward end
25 of the paper-holder, a driven shaft arranged above the paper-holder, a cam fixed on said shaft and adapted to depress the forward end of the paper-holder, and a brush fixed to the said shaft and adapted to engage the founda-
30 tion-sheet at the time that the cam depresses the paper-holder, substantially as described.

6. An artificial-comb-foundation piling device consisting of a receptacle open in front and on the rear end and adapted to be raised
35 and lowered in a suitable frame, in combination with a rock-shaft journaled back of the receptacle, a bell-crank lever having an arm 19^b, a rock-shaft 21 having an arm 21^a and a downwardly-projecting arm, a connecting-

rod 20, a flap hinged in front of the receptacle, 40 an arm extending outwardly from the flap, a rod connecting this arm and the downwardly-projecting arm of the rock-shaft, and means for operating the bell-crank lever, substantially as described. 45

7. The combination of die-rolls, an endless carrier and a gripping-roller to take favosed sheets of wax from the die-rolls, a knife for cutting the favosed sheets into foundations of a required size, a paper-holder pivoted in 50 front of the endless carrier, rollers for conveying the foundation-sheets into the paper-holder, a receptacle, means for carrying the foundation-sheets from the paper-holder into the receptacle, and means for automatically 55 arranging the foundation-sheets in a uniform pile in said receptacle, substantially as described.

8. The combination of die-rolls, means for conveying favosed sheet of wax from the die- 60 rolls to the cut-off knife, a paper-holder pivoted forward of the cut-off knife, means for carrying the foundation-sheets from the cut-off knife onto said paper-holder, a weighted lever adapted to elevate the forward end 65 of the paper-holder, a revolving stop journaled in standards at the forward end of the paper-holder, means for depressing the forward end of the paper-holder at intervals, and means for carrying the foundation-sheets 70 from the paper-holder into the receptacle, substantially as described.

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

EDWARD B. WEED.

Witnesses:

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HATTIE BUSER.