

(No Model.)

E. M. JEWETT.
BOX FORMING MACHINE.

No. 347,299.

Patented Aug. 10, 1886.

Fig. 1.

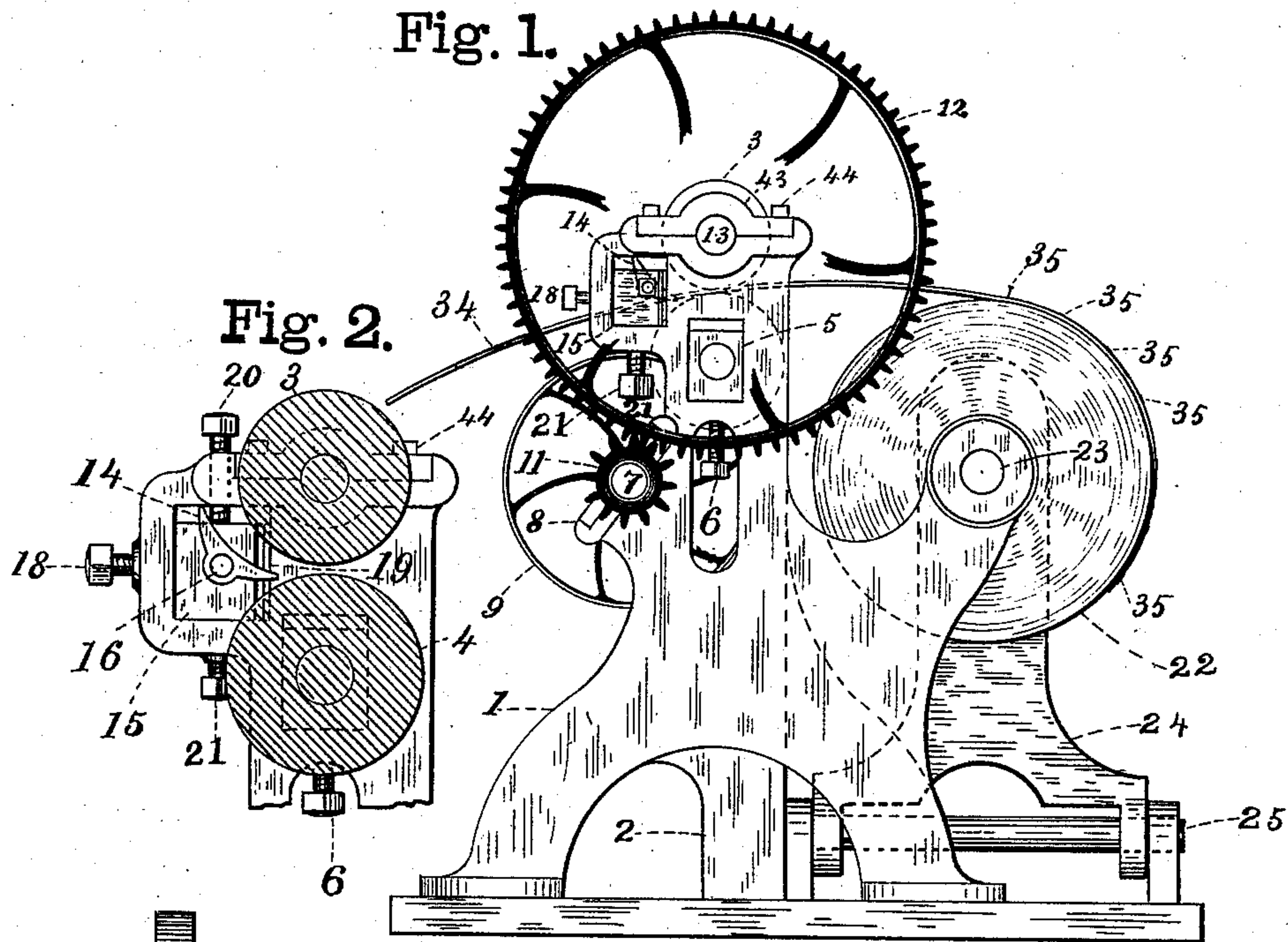


Fig. 2.

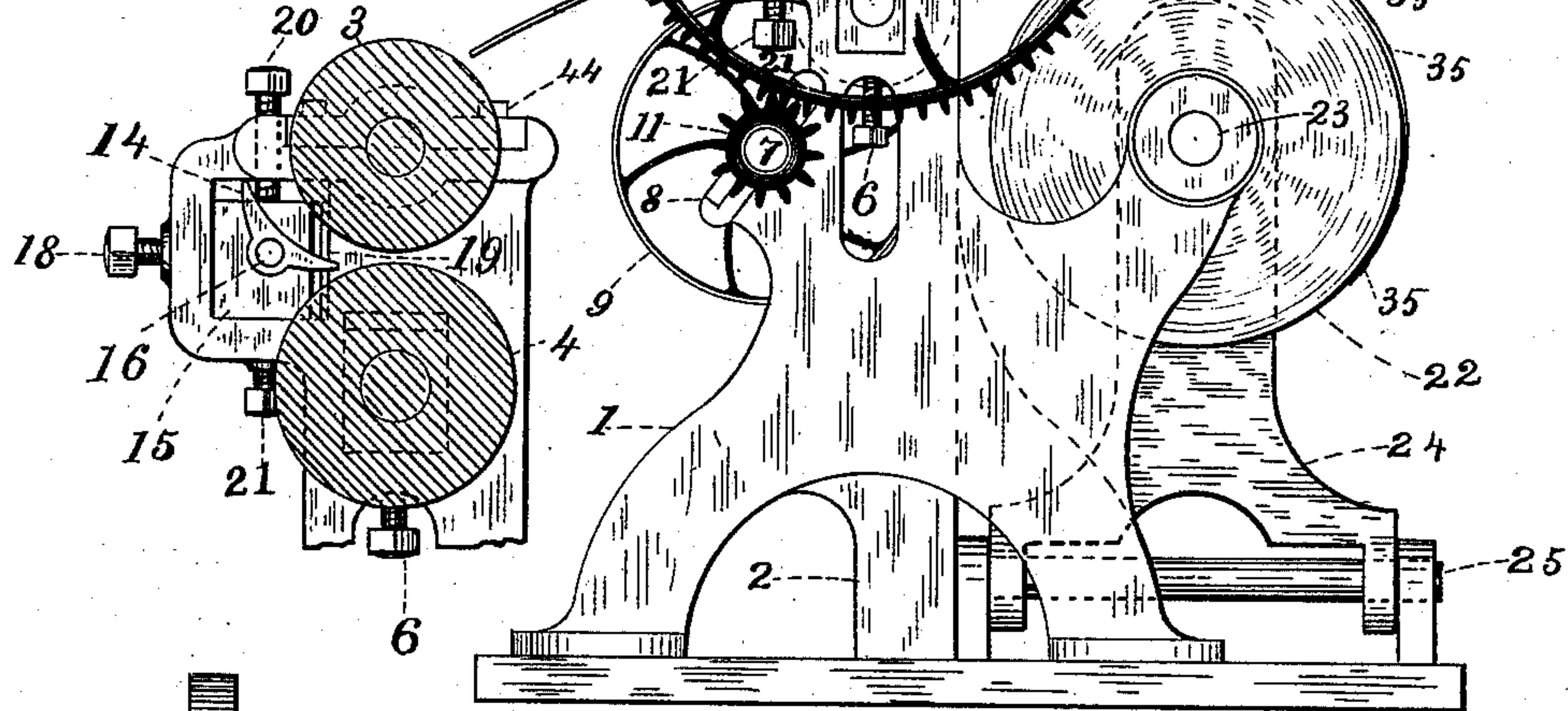


Fig. 3.

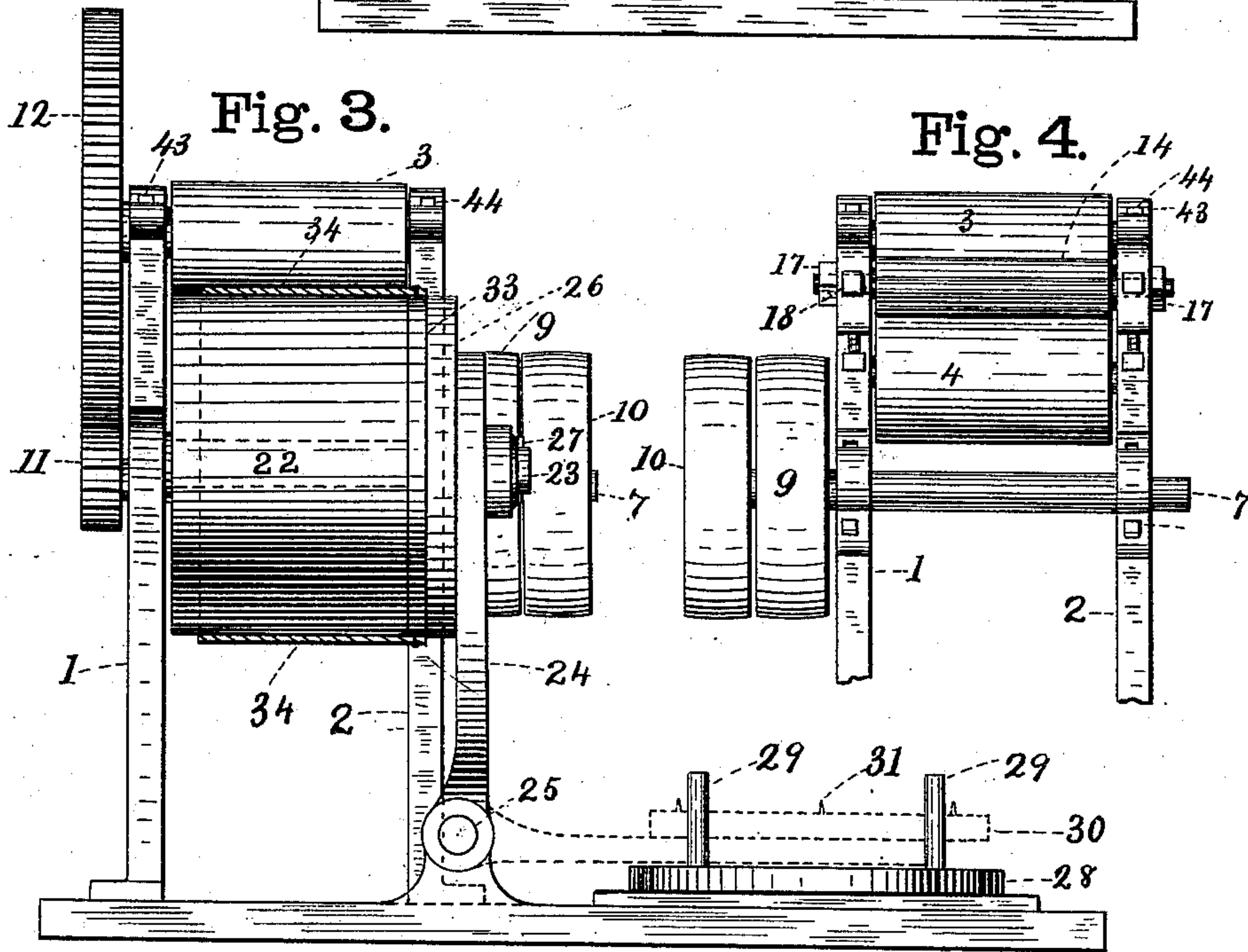


Fig. 4.

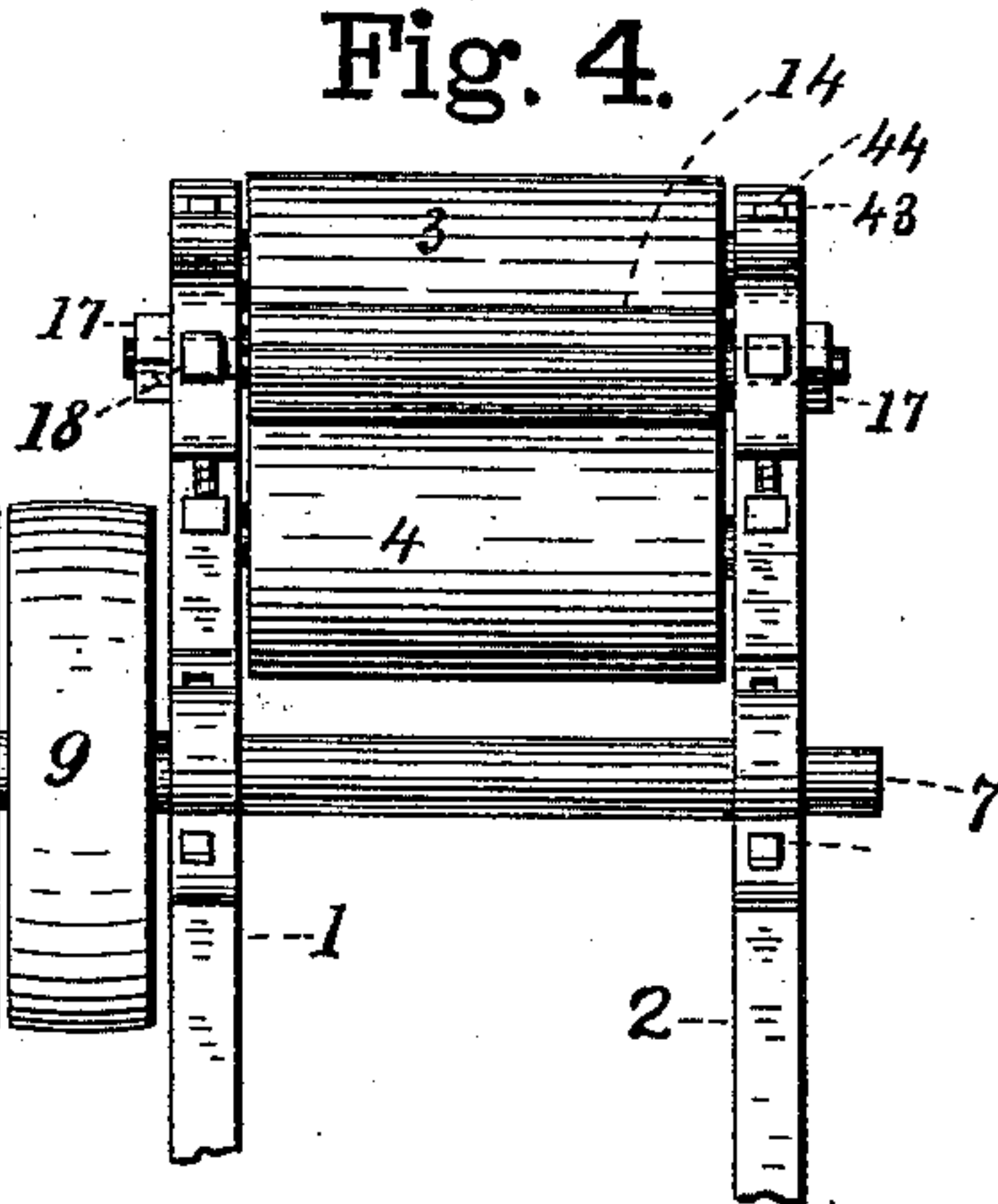
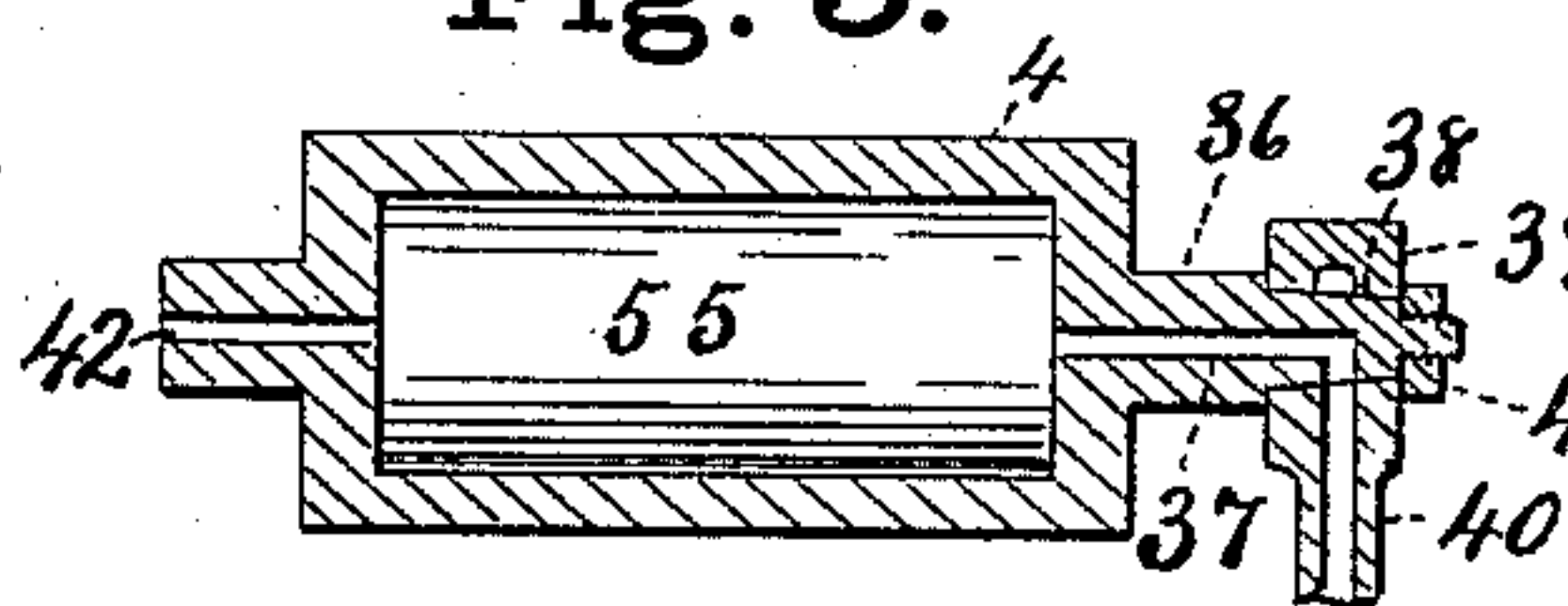


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

EDWARD M. JEWETT, OF BUFFALO, NEW YORK, ASSIGNOR TO EDWARD W. JEWETT, OF SAME PLACE.

BOX-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 347,299, dated August 10, 1886.

Application filed February 1, 1886. Serial No. 190,451. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. JEWETT, a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Machines for Making Boxes or Forming Stock, of which the following is a specification.

The object of this invention is to produce a machine for forming from dry material the body and cover hoops for cheese or other boxes, or for other purposes, also for securing the bottoms and tops to boxes while being formed; and it consists of the hoop-forming rollers and an adjustable concave shoe mounted in boxes, in a suitable frame-work, and combined with a drum for receiving the material and mechanism for placing and securing the bottom or top in position within the hoop or body (as it is being formed) in a convenient position for nailing, all of which will be fully and clearly hereinafter shown, described, and claimed, by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the machine, a portion of the arms of the large spur-wheel being broken away to show the mechanism behind it more clearly. Fig. 2 is a side elevation of a portion of the upper part of the frame-work and a vertical section through the forming-rollers. Fig. 3 is an end elevation showing the gearing and driving mechanism, and also the receiving or nailing roller with a section of a cheese or other box hoop or body upon it and the bottom in the position in which it is nailed to the hoop or body. Fig. 4 represents a front view of a portion of the machine, showing the forming-rollers and adjustable shoe; and Fig. 5 is a longitudinal central section through one of the forming-rollers, showing a suitable means for admitting steam thereto.

Heretofore it has been found impossible to form the bodies of cheese or other boxes so that they will retain their shape permanently after being formed. The reason for this has been the use of green, wet, or steamed material, which, when released from their forming force, will spring back to their normal shape again, and also in forming them without using sufficient compressing force.

With my machine the material is not only slightly compressed and bent, but it is formed and compressed in a dry state at the same time with sufficient force to cause it to bend evenly and to retain its shape when so bent.

In said drawings, 1 and 2 represent the frame of the machine. It is made preferably of cast-iron, as being the strongest and best material. The side 2 of the frame is made narrower, so as to leave room for taking the cheese or other box off from the nailing-drum.

3 and 4 represent the forming-rollers. They are mounted in boxes in the frame. The lower roller, 4, is set in the vertically-sliding boxes 5, and is made adjustable by means of set-screws 6—one on each side of the machine. One or both of these rollers may be either plain or corrugated, so as to give a more uniform appearance to the surface of the article when formed.

The driving shaft 7 is mounted in boxes 8, in the frame, and is provided with the usual tight and loose driving-pulleys, 9 and 10, and also with a pinion, 11, which is adapted to gear in with the spur-wheel 12 on the shaft 13 of the upper roller, 3.

14 represents an adjustable shoe, made concave in the direction of its width. It is supported in boxes 15, in bearings 16, so that it may be turned thereon, and is firmly secured in such position, when turned, by means of the nuts 17, which are loosened when it is necessary to adjust it in this way, and is then rigidly secured by tightening them. This shoe is also capable of an adjustment toward or from the forming-rollers by means of the set-screw 18 and a series of thin removable plates, 19. (See Fig. 2.) It is also made adjustable vertically up or down, by means of the set-screws 20 and 21. This adjustment is required, so as to adjust it for different kinds of material and for forming boxes of different sizes. The receiving and nailing roller or drum 22 is mounted on a shaft, 23, which shaft is secured rigidly to the side frame, 1. This receiving-roller is made easily removable (so as to adapt the machine for boxes or stock, or jackets for cans of different sizes) by drawing it off from the free end of the shaft 23, the side frame, 2, being cut away, as shown, so as to admit of its removal.

On that side of the machine opposite side 2 is a pivoted swinging plate, 24, secured by a shaft, (or pin,) 25, to the base of the machine. It is provided with a circular disk, 26, of the same size as the receiving and nailing roller 22, and is pivoted to the swinging plate 24 by a pin, 27, (see Fig. 3,) so it may turn easily on said pin.

On the base of the machine is rigidly secured, in any well-known way, a bed-piece, 28, having a series of vertical guide-pins, 29. These pins are set in a circle, so that when the swinging plate 24 is turned down, as shown by the dotted lines 30 in Fig. 3, the disk 26 will swing down within the circle of these pins. This disk is provided with a series of sharp-pointed pins, 31, shown on the dotted-line representation of said disk 30 in Fig. 3.

The object of the guide-pins 29 is to permit the bottom 33 (shown also in Fig. 3) of the box to be readily set onto the disk 26 in exactly the right place, so it will be in the proper position against the receiving and nailing roller when turned up against it, to permit the body or hoop to be nailed on as it is being formed. The object of the pins 31 is to provide the means for securely holding the bottom or top firmly in place while being nailed.

With some kinds of stock it is well to have one or both of the forming and compressing rollers hot, as such stock after being so formed retains its shape better than if formed when the rollers are cold. I accomplish this by introducing a jet of hot steam into the rollers. (See Fig. 5, in which is shown a section cut lengthwise through the center of the roller 4, for instance.) 55 is a hollow space within the roller. At the end of one of its journals, 36, is a small opening, 37, which passes nearly through the journal, and then bends at right angles and comes through the side of the tapering portion 38. Over this tapering portion is fitted (steam-tight) a box, 39, leading to or connected with a pipe, 40, connected in any well-known way to a steam-boiler. This box 39 is kept to its place by a nut, 41. The outlet for the steam is shown at 42; but it may be placed at any other point on the roller, and be provided, if desired, with a plug or stop-cock of any well-known construction. It will be seen from this construction that the parts 39 and 40 remain stationary while the roller turns, and still keeps a tight joint, so that the hot steam may be passing in and out of the roller while it is in operation; but the steam may be thus used or not, according to the condition or kind of stock used.

If the stock be a little damp it is often well to heat the rollers. The upper roller, 3, is secured in place by caps 43 and bolts 44, and the frame is secured and put together in the usual well-known way, so that a further description of that portion of the machine is not required here.

The operation of the invention is as follows: The compressing and forming rollers 3 and 4 being adjusted so as to give the amount of com-

pressing force required, and the shoe 14 being also adjusted to form the material to the size of the circle required or to the size of the box, the material 34 is now placed in between the forming and compressing rollers, (see Fig. 1,) and as the machine is started it passes in and is compressed and bent at the same time as it moves forward. It moves onto the receiving and nailing roller 22, (a bottom or top having been previously pressed down against and onto the pins 31 on the disk 26, and then swings up against the receiving and nailing roller.) The piece 34 is now nailed onto the bottom while it is being formed and set onto the nailing-roller, which is fitted to turn easily on its shaft, all of which will be readily understood by reference to Fig. 1, where 35 represents the nails as they are being driven. When the material has passed through the forming rollers and the two ends lap on the receiving roller, (or drum) they are nailed together in the usual way and the box is taken off. If it is desired to form the bodies or tubes only and nail them together, the receiving or nailing roller would be used without the circular disk 26 and its operating parts. In this way jackets for cans or other purposes can be made. If desired, the pins 29 and base 28 may be dispensed with without leaving the machine inoperative; but in that case it would require more care to put the bottoms or tops on the disk 26, so as to bring them exactly in the right place to be nailed onto the body or cover-hoop.

I claim as my invention—

1. In a machine for making boxes or forming stock, the combination of the forming and compressing rollers set in bearings in the frame and connected together by gearing, one of the rollers being adjustable to or from the other, and an adjustable shoe made concave in the direction of its width and provided with trunnions set in boxes, so as to be capable of a turning movement on said trunnions and be adjustable and rigidly fixed in said boxes at any point of said movement, substantially as described.

2. In a machine for making boxes or forming stock from dry material, the combination of the forming and compressing rollers, their operating and adjusting mechanism, substantially as above described, and an adjustable shoe concave in the direction of its width and set in movable boxes made adjustable vertically by means of the screw-bolts 20 21, as and for the purposes described.

3. A machine for making boxes or forming stock, consisting of the forming and compressing rollers and mechanism for operating them, substantially as above specified, in combination with a concave shoe mounted on adjustable trunnions set in vertically and horizontally adjustable boxes, so as to be adjustable on its trunnions vertically and horizontally, as described.

4. In a machine for making boxes or forming stock, the forming and compressing rollers

geared together, substantially as specified, and an adjustable concave shoe, the whole secured in a suitable frame, as set forth, in combination with a rotating receiving and nailing drum for receiving the stock as it comes from the forming and compressing rollers to be nailed.

5 5. The combination of the forming and compressing rollers mounted in bearings in the frame, a means for bending the stock as it is being compressed and carried forward by the forming-rollers, a receiving and nailing drum to receive the stock as it is being formed, and a swinging plate having a pivoted disk provided with pins 31, upon which the bottoms or tops are placed and brought into position to be nailed to the body or top hoop while being formed, substantially as described.

15 6. The combination of the forming and compressing rollers, a means for bending the stock as it is being compressed and carried forward by the forming-rollers, a receiving and nailing drum to receive the stock as it is being formed, a pivoted frame or swinging plate having a pivoted disk provided with pins 31, upon which the bottoms or tops are placed and brought into position to be nailed to the body or top hoop while being formed, and a bed-piece, 28, having a series of vertical pins, 29, for centering the bottoms or tops when placed upon the pivoted circular disk, substantially as described.

7. In a machine for forming, compressing, and nailing stock, having a nailing-drum upon which the stock is received to be nailed as it leaves the forming-rollers, the combination of a pivoted swinging plate or frame provided with a pivoted disk having pins for holding a bottom or top in place while being nailed to the body, and a bed-piece, 28, provided with vertical guide-pins for guiding the bottom or top to its proper central position while being placed on the pivoted disk preparatory to swinging it up to the nailing-drum to be nailed to the body, substantially as described.

45 8. In a machine for making boxes or forming stock, the forming and compressing rollers, a means for bending the stock as it is carried forward by said rollers, consisting of the adjustable shoe 14, a frame in which the rollers, bending mechanism, and nailing-drum are mounted, having one side, 2, cut away, substantially as specified, in combination with the pivoted swinging plate 24, having a pivoted circular disk, 26, provided with pins 31, and a removable receiving and nailing drum mounted upon a shaft rigidly secured to one side of the machine, so as to rotate thereon, substantially as and for the purposes described.

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Witnesses:

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