

No. 710,107.

Patented Sept. 30, 1902.

W. I. LEWIS.
LAPPING MACHINE.

(Application filed Apr. 29, 1901.)

(No Model.)

2 Sheets—Sheet 1.

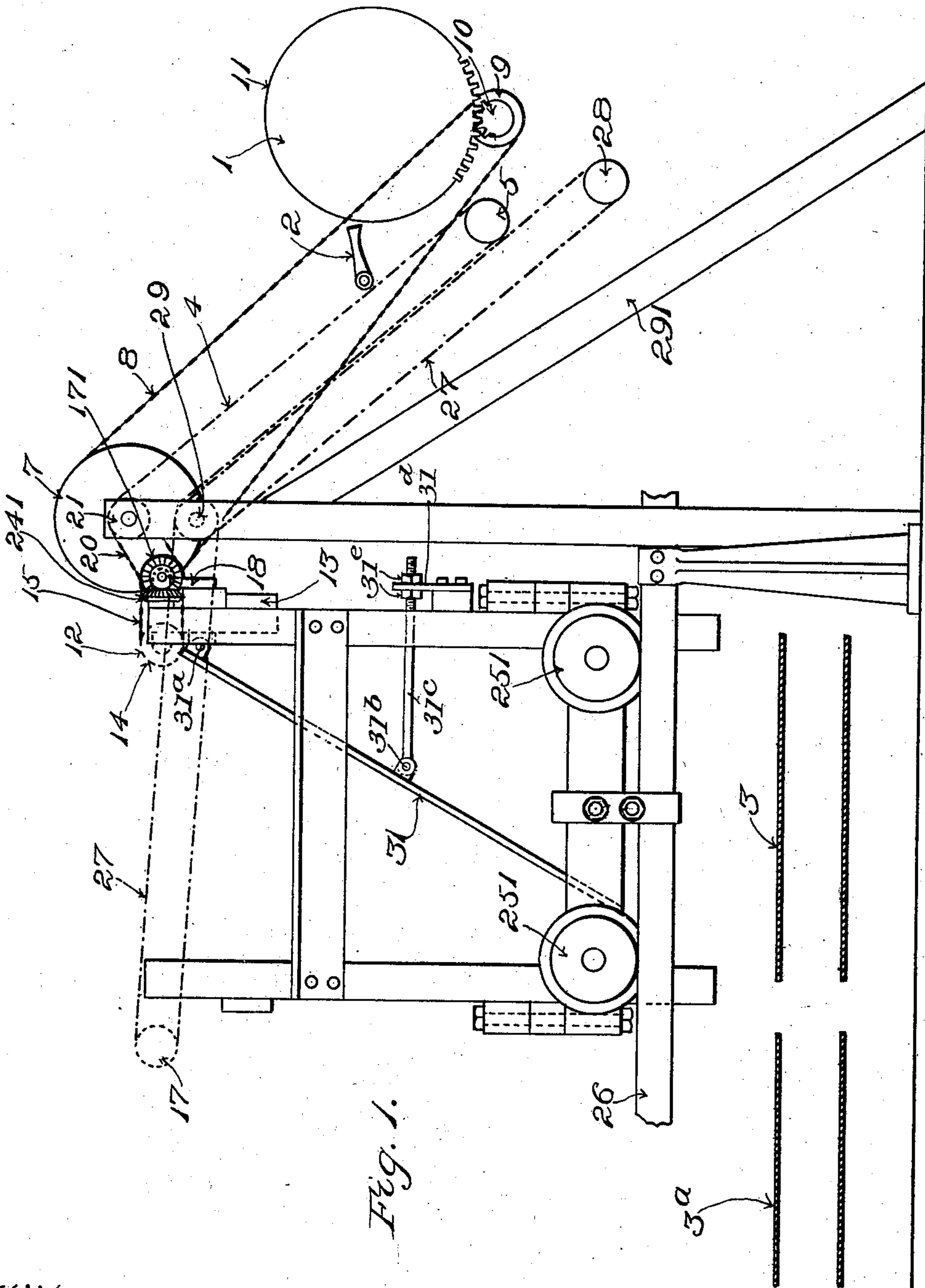


Fig. 1.

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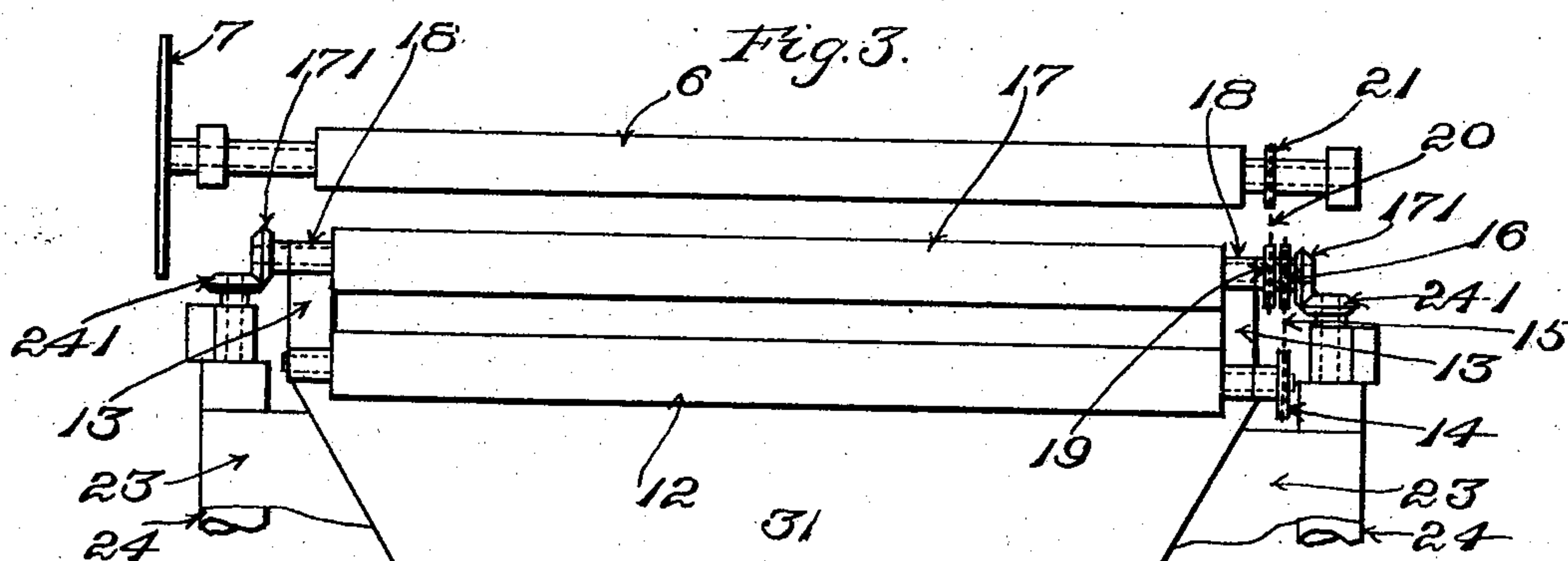
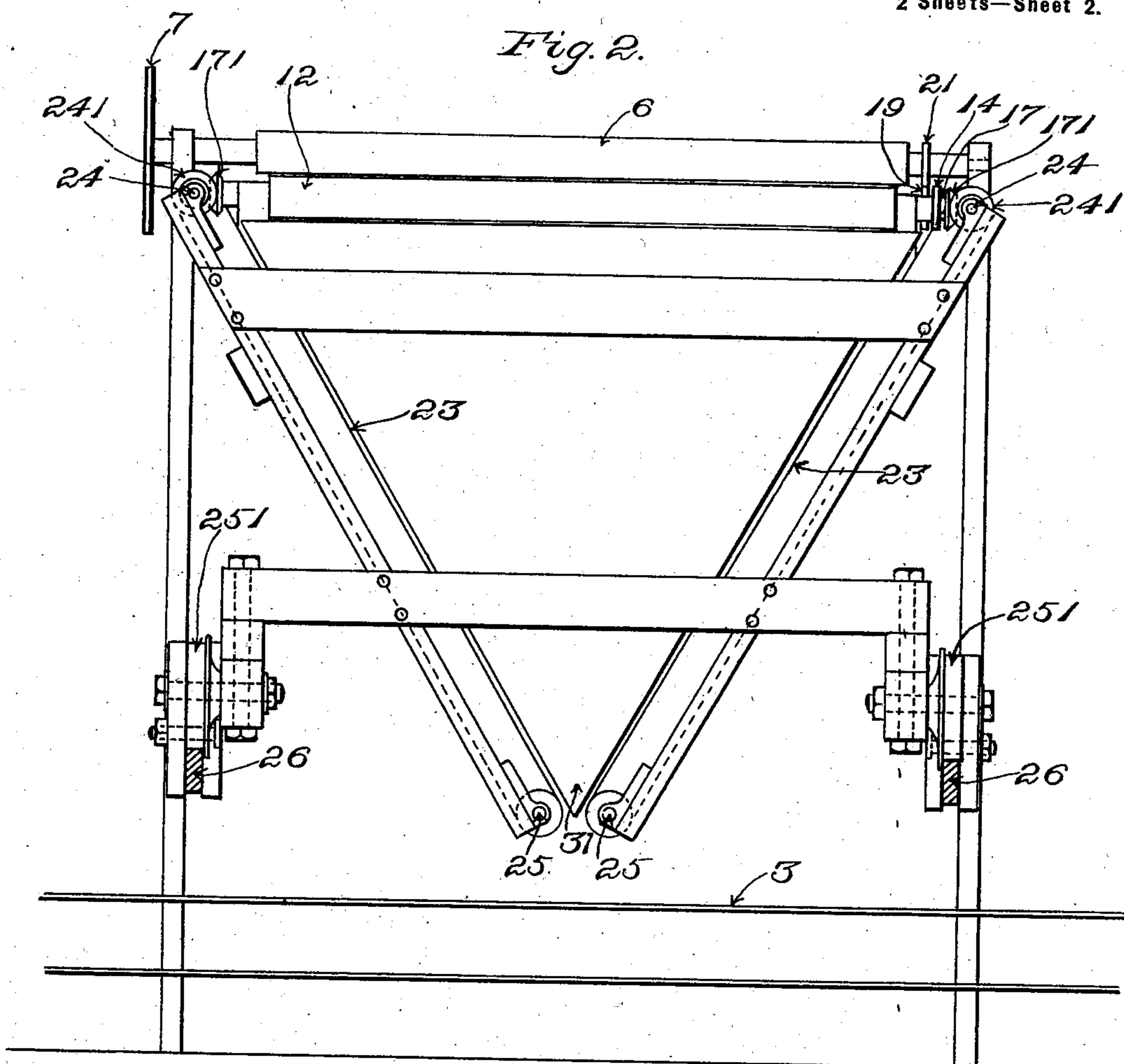
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UNITED STATES PATENT OFFICE.

WILLARD I. LEWIS, OF WALPOLE, MASSACHUSETTS.

LAPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 710,107, dated September 30, 1902.

Application filed April 29, 1901. Serial No. 57,914. (No model.)

To all whom it may concern:

Be it known that I, WILLARD I. LEWIS, a citizen of the United States, residing at Walpole, in the county of Norfolk, State of Massachusetts, have invented a certain new and useful Improvement in Lapping-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention consists in novel and improved mechanism for use in making laps for bats or wadding.

In the drawings, Figure 1 shows, mainly in side elevation, an embodiment of the invention. Fig. 2 is an elevation taken from the left in Fig. 1. Fig. 3 is a partial plan of the doubler and certain parts adjacent the same.

Having reference to the drawings, my invention usually is employed in connection with the machines which prepare the cotton or other fibrous material for being formed into laps; and the devices embodying the invention are arranged to receive the material in the form of fleeces as the latter leave the discharging or delivering devices of the said machines. The latter devices are here represented by the doffer 1 and doffing or stripping knife or comb 2, coacting with the doffer.

In connection with each fleece to be incorporated in the lap I employ a triangular doubler 31, by means of which the fleece is doubled upon itself lengthwise by laying its side portions together. The fleece in being led along is carried past and over the said doubler, its middle being drawn over the apex of the triangle and its side portions being caused to turn around the converging sides of the triangle and being brought together as the fleece passes away from the doubler.

The construction of the doubler and the mode of mounting the same in the doubler-frame 13, by which latter the doubler is supported, may be varied in practice as desired. In the illustrated embodiment of the invention I have shown the doubler connected pivotally, as at 31^a, with the doubler-frame 13. The pivotal connection just referred to is at the broad upper end or base of the triangular doubler. With the lower part of the doubler is connected pivotally, as at 31^b, a rod 31^c, the outer end of which is screw-threaded and passes through a hole in a plate or bracket 31^d, that is attached to the doubler-frame 13, the said screw-threaded portion of the rod

having nuts 31^e 31^e applied to the same at opposite sides of the plate or bracket 31^d. This construction enables the doubler to be adjusted in position to get the required angle thereof with respect to the horizon.

For the purpose of carrying the fleece from the discharging or delivering devices 1 2 to the doubler 31 any suitable conveying means may be employed. I have herein shown an apron 4, passing around rolls 5 6, the latter of which is provided with a pulley or sprocket-wheel 7, around which passes a band or chain 8, also passing around a pulley or sprocket-wheel 9, that is fast with a spur-gear 10, meshing with the doffer-gear 11.

In the illustrated embodiment of the invention what may be termed the "base" of the triangular doubler is uppermost, and adjacent the said base is located a clearer-roll 12, the latter being arranged parallel with the said base, over which roll the fleece passes on its way to the doubler and from the periphery of which it drops onto the face of the doubler. The doubler and the clearer-roll are supported on the doubler-frame 13, and for the purpose of rotating the said clearer-roll it is provided with a sprocket-wheel 14, around which passes a chain 15, also passing around a sprocket-wheel 16 on a roll 17, journaled in bearings 18 on the doubler-frame. A second sprocket-wheel 19, fast with the said roll, receives a chain 20, passing around the sprocket-wheel 21 on the roll 6. The purpose of the clearer-roll 12 is to secure a more perfect delivery of the fleece from the apron 4 to the doubler. The fleece has a tendency to cling to the surface of the apron 4, so that at the place where the fleece should discharge from the said apron in passing toward the doubler portions of the fleece remain adhering to the apron. This would result in tearing the fleece if measures were not taken to prevent the tearing from occurring. Where a slatted apron is employed, the spaces open up between the slats as the latter pass around the roll 17 and afterward close up again at the under side of the said roll. The spreading apart of the slats as they pass around the roll has a tendency to stretch the fleece, while the closing together of the same has a tendency to nip the fleece, so as to hold portions of the latter and cause tearing. The clearer-roll 12, however, supports the fleece at the delivery end of the apron 4, lifting it from the

surface of the latter at the roll 17, effecting the complete detachment of the fleece and preventing it from being strained or stretched by the separation of the slats in going around the said roll and also from being nipped at the under side of the roll. In its travel from the doffer to the doubler the fleece is supported by the apron 4 and then by the clearer-roll 12. In order that no strain may come upon the fleece between the clearer-roll and the doubler and in passing the latter, such as would result from longitudinal draft on the fleece in endeavoring to pull it to and past the doubler, I locate the clearer-roll above the doubler, so that the fleece shall pass directly downward from the clearer-roll to the doubler, and I arrange the doubler in its entirety in a position with its main face inclined with reference to the vertical, so that the fleece descends naturally by gravity past the doubler, but is so supported by the latter as to prevent all tendency to tear apart on account of its weight. From the doubler the doubled fleece passes to the receiver or accumulator on which the lap is formed. In some cases the character of the receiver or accumulator may vary in practice.

In the illustrated embodiment of the entire invention I employ a horizontally-extending receiving-apron 3 below the doubler, to which the fleece passes from the latter.

The fleece is of so tender and delicate a character that as far as possible the same must be relieved from strain during the operations to which it is subjected in being doubled longitudinally. I therefore form the face of the triangular doubler over which the fleece moves with a smooth surface throughout its superficial area, and I arrange the said doubler in a downwardly-inclined position in order that the fleece may tend to slide down the same under the influence of gravity. The portions thereof extending downward at the sides of the doubler would part or tear as a result of the weight thereof. I therefore provide for giving a certain amount of support to the depending portions of the fleece by means of surfaces extending under the doubler, the same being located parallel with the sides of the doubler and comparatively close thereto, the said surfaces receiving the fleece as it passes downward around the converging edges of the doubler and sustaining a portion of the weight thereof, thereby relieving the strain which is due to such weight and obviating the tendency to part or tear the fleece. Preferably I employ moving surfaces having the same or substantially the same speed as the travel of the fleece. In the illustrated embodiment of the invention these moving surfaces are constituted by aprons 23 23, extending around rolls 24 25, which are parallel with each other and are suitably journaled at the top and bottom of the doubler-frame. The said aprons are caused to travel toward each other, they being driven by means of bevel-gears 241 241 on the rolls 24

24, meshing with bevel-gears 171 171, fast with the roll 17, which, as stated above, is journaled in bearings in the doubler-frame. The rolls 25 25 are located close together adjacent the apex or lower end of the doubler and serve to bring the side portions of the doubled fleece together as the fleece leaves the doubler and passes to the receiving or forming apron.

In practice a number of the fiber-preparing machines or other fleece-supplying machines is ranged in a series in the direction of the length of the receiving and forming apron 3, and in connection with each of the said fleece-supplying machines is provided a fleece-doubling apparatus such as I have just described, the doubled fleeces being received in succession upon the said receiving apron, one superimposing itself upon another until the required thickness for the desired lap has been secured.

The thickness of lap desired to be produced varies. In some instances it may be required to secure the maximum thickness due to uniting the fleeces from all the fleece-supplying machines of the series adjacent the receiving and forming apron 3. In other instances the thickness desired may be that which is produced by uniting a smaller number of fleeces.

One aim of my invention is to enable laps of different thicknesses to be produced without the loss of production, which is incident to arresting the working of any of the fleece-supplying machines—namely, those which are in excess of the number required for producing a lap of the desired thickness. Accordingly I employ two or more receiving and forming aprons or other receivers or accumulators, and I combine them with the means for delivering fleeces thereto in a manner which enables me either to deliver the entire number of fleeces to one of the said aprons or other receivers or accumulators or to divide up the entire number of fleeces between the said aprons, receivers, or accumulators by delivering a given number of the said fleeces to one thereof and the remainder to the other thereof, in this latter case producing simultaneously two laps of either equal or unequal thicknesses. With these ends in view the means for guiding each fleece to the apron or other receiver or forming device is mounted with capacity to be shifted from one receiving-apron to the other. Herein in the illustrated embodiment of my complete invention I have shown the doubler-frame mounted on trucks or rolls 251 251 upon transversely-extending rails 26 26 above two receiving-aprons 3 3^a. The doubler-frame may be rolled upon these rails from a position above one receiving-apron to a position above the other thereof, as required.

For the purpose of conveying the fleece from the apron 4 to the doubler when the latter is in position over the remote receiving-apron 3^a I provide a supplemental or transfer apron 27, passing around the roll 17. Or-

dinarily this transfer-apron is not required to actively coöperate in the transfer of the fleece from apron 4 to the clearer-roll 12, although the fleece does make contact with the surface thereof in passing from the said apron 4 to the said clearer-roll when the parts are positioned as in Fig. 1. Normally the transfer-apron is extended downward around a supporting-roll 28, mounted conveniently in bearings in the lower part of the frame 291 of the machine. When, however, the doubler-frame is shifted into a position over the remote receiving-apron 3^a, the supporting-roll 28 is removed, and as the transfer-apron is drawn out by the movement of the doubler-frame into a horizontal or substantially horizontal position, as shown in dotted lines, it tightens around the roll 29, which is mounted in said frame 291 immediately adjacent the upper roll 6 of the apron 4. The transfer-apron then serves to carry the fleece over from the upper end of apron 4 to the doubler.

What I claim is—

1. In a lapping-machine, in combination, a fleece-supplying machine, a triangular doubler receiving the fleece from said machine and over the apex and sides of which the fleece passes and is doubled longitudinally, supporting-surfaces for the side portions of the fleece adjacent the sides of said doubler, and a lap-former on which the doubled fleece is received, substantially as described.

2. In a lapping-machine, in combination, a fleece-supplying machine, a triangular doubler over which the fleece from said machine passes and is doubled lengthwise of itself, endless aprons at opposite sides of the doubler supporting the side portions of the fleece, and a lap-former on which the doubled fleece is received, substantially as described.

3. In a lapping-machine, in combination, the fleece-supplying machine, the plurality of lap-formers arranged side by side, means for delivering the fleece from said machine to said lap-formers adjustable to deliver to either of said lap-formers as desired, substantially as described.

4. In a lapping-machine, in combination, the fleece-supplying machine, the plurality of lap-formers arranged side by side, and a doubler by which the fleece is doubled lengthwise upon itself, said doubler being adjustable to deliver to either of said lap-formers as desired, substantially as described.

5. In a lapping-machine, in combination, the plurality of lap-formers arranged side by side, the movable doubler-frame, and the doubler connected with said doubler-frame and adapted to be placed in operative position with relation to either of said lap-formers as desired, substantially as described.

6. In a lapping-machine, in combination, the plurality of lap-formers arranged side by side, the movable doubler-frame, the doubler, adapted to be placed in operative position with relation to either of said lap-formers as desired, the fleece-supplying machine and

means for conveying the fleece therefrom to the doubler, and the transfer-apron to transfer the fleece from the said means to the doubler when the latter is in operative relations with the more remote lap-former, substantially as described.

7. In combination, means for supplying a fleece, the triangular doubler over which the fleece is doubled lengthwise upon itself, the clearer-roll at the receiving end of the face of the doubler, and the surfaces to support the sides of the fleece, at the sides of the doubler, substantially as described.

8. In combination, means for supplying a fleece, the triangular doubler over which the fleece is doubled lengthwise upon itself, the clearer-roll at the receiving end of the face of the doubler, and the endless aprons at the sides of the doubler to support the sides of the fleece, substantially as described.

9. In combination, the fleece-conveying apron 4, the clearer-roll adjacent the delivery portion of the said apron serving to detach the fleece from said delivery portion, and the triangular doubler having its main face inclined with reference to the vertical and to which the fleece descends from the clearer-roll, substantially as described.

10. The combination, in devices for folding or doubling longitudinally a fleece of fibrous material, of a delivery-apron, an inclined triangular guide presenting a smooth surface throughout its superficial area and arranged to receive the fleece from the delivery-apron, and inclined aprons mounted upon rollers which are parallel to each other, traveling under the guide and toward each other whereby the fleece is folded or doubled longitudinally, substantially as described.

11. The combination, in devices for folding or doubling longitudinally a fleece of fibrous material, of a delivery-apron, two aprons arranged to travel at right angles to the travel of the delivery-apron, and arranged on an incline and spaced apart for the passage of the folded fleece, with an inclined triangular guide presenting a smooth surface throughout its superficial area, mounted in the space above the two aprons and arranged to receive the fleece from the delivery-apron, substantially as described.

12. The combination, in devices for folding or doubling longitudinally a fleece of fibrous material, of a frame, an inclined guide-surface thereon presenting a smooth surface throughout its superficial area, a set of rollers on each side of said guide, and a continuous apron on each set of said rollers whereby a fleece of fibrous material may be received from the guide-surface and folded or doubled longitudinally, substantially as described.

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

WILLARD I. LEWIS.

Witnesses:

CHAS. F. RANDALL,
EDITH J. ANDERSON.