No. 881,084. PATENTED MAR. 3, 1908.

A. M. PRICE.

FEEDING MECHANISM FOR WRAPPING MACHINES.

APPLICATION FILED FEB. 11, 1907.

4 SHEETS—SHEET 1.

Fig. 8.

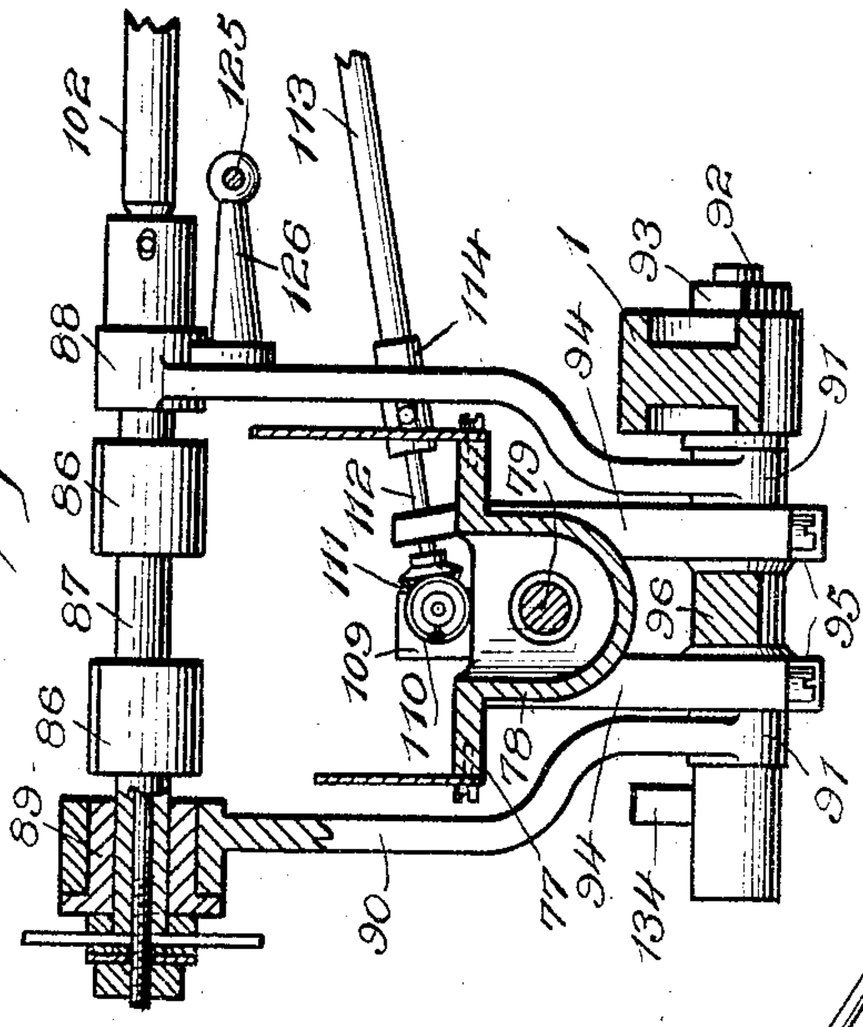

Fig. 11.

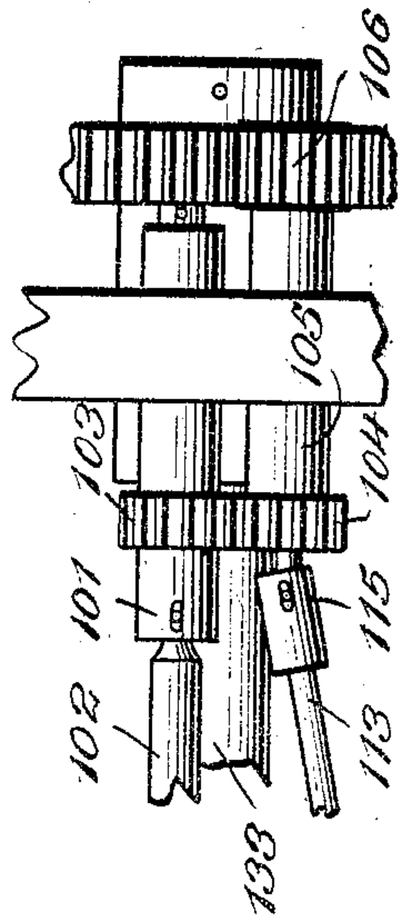

Fig. 1.

Witnesses

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4 SHEETS—SHEET 2.

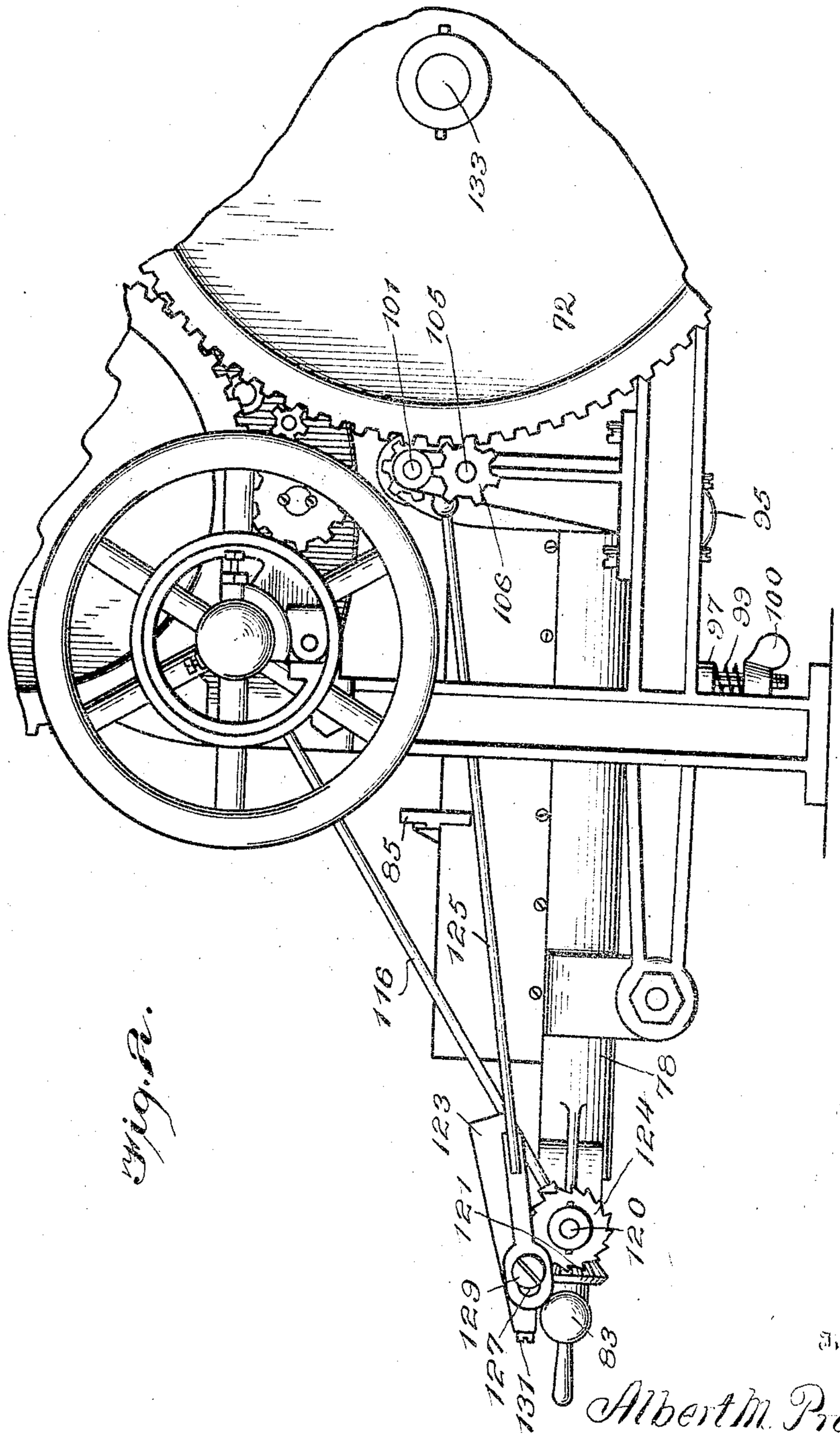

Fig. 2.

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4 SHEETS—SHEET 3.

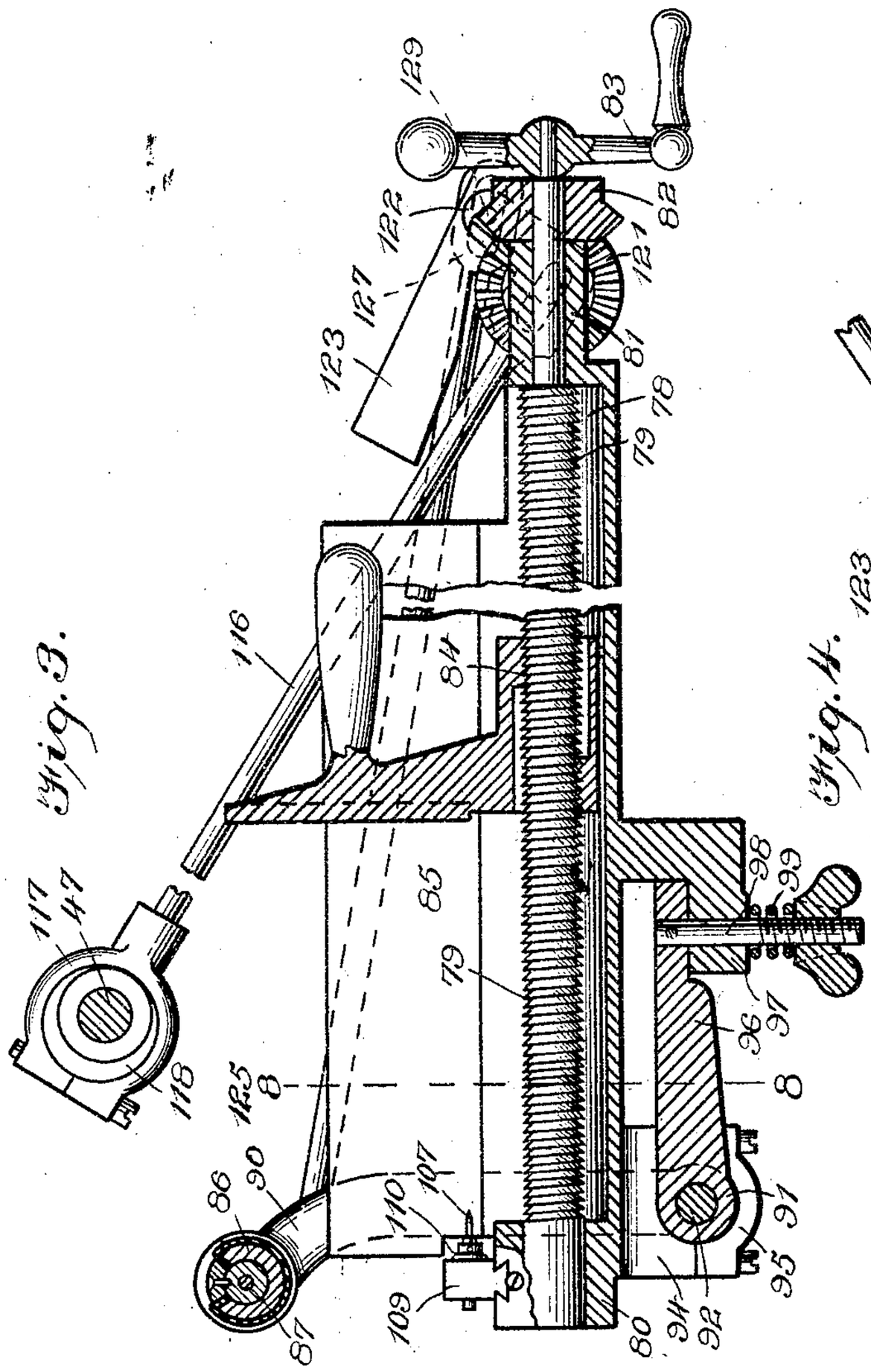

Fig. 3.

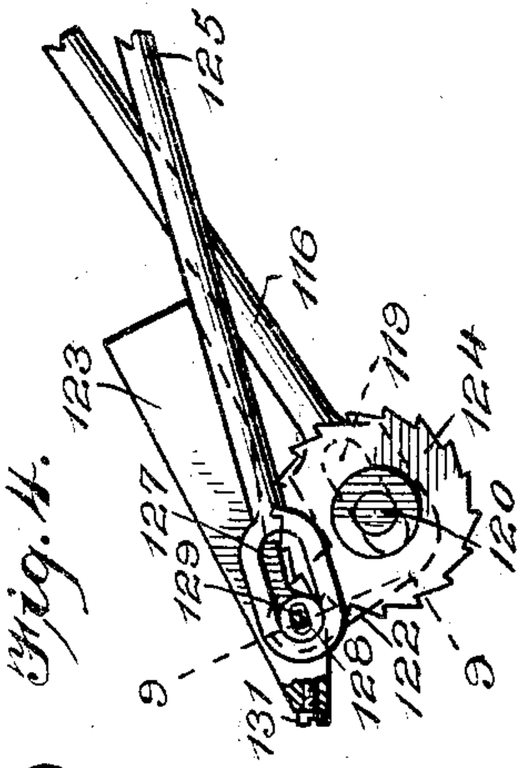

Fig. 4.

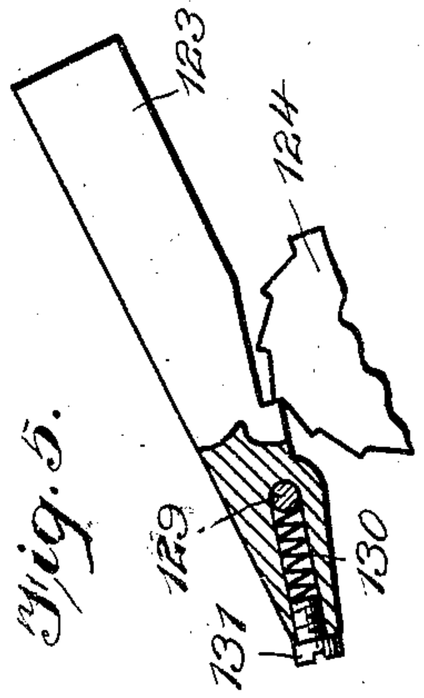

Fig. 5.

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4 SHEETS—SHEET 4.

Fig. 6.

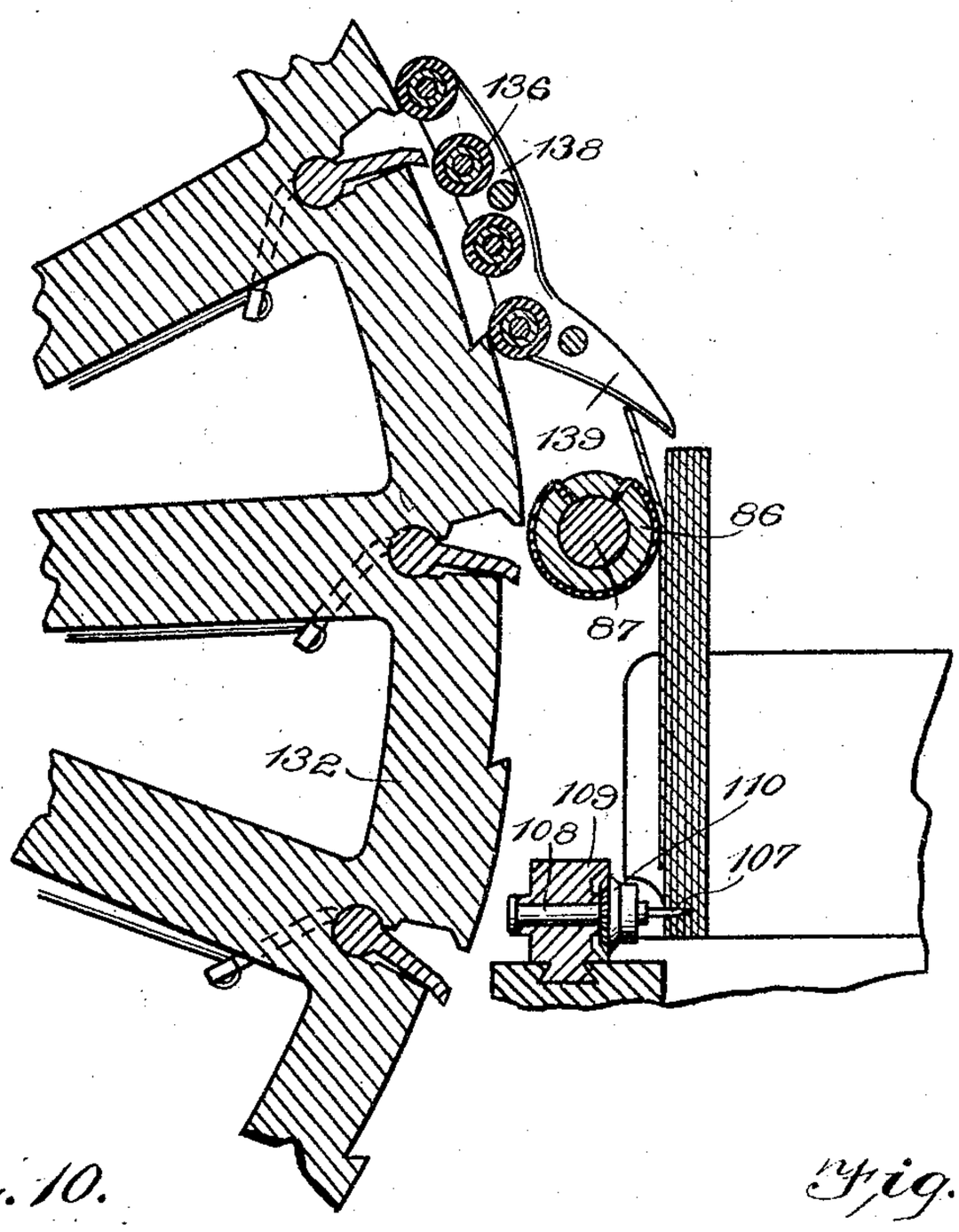


Fig. 10.

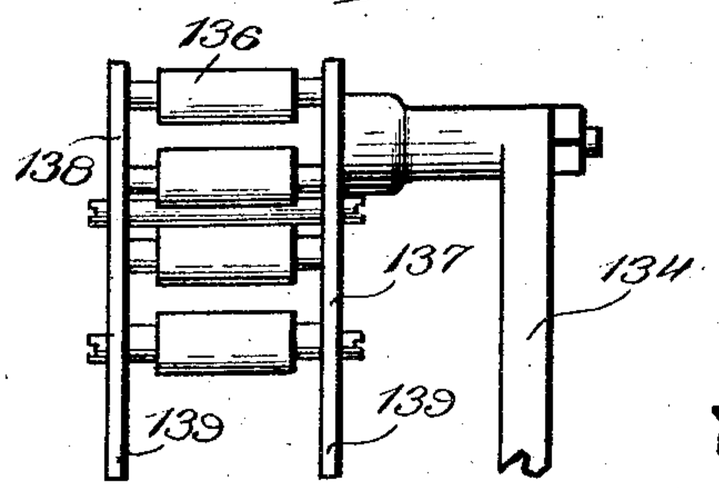


Fig. 7.

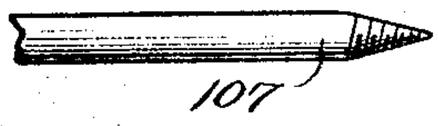
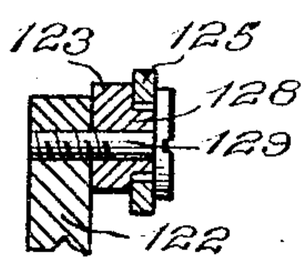


Fig. 9.



Witnesses
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S. Brasheans

Inventor
Albert M. Price
By William R. Baird
His Atty.

UNITED STATES PATENT OFFICE.

ALBERT M. PRICE, OF ELGIN, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ADOLPH E. BRION, OF NEW YORK, N. Y.

FEEDING MECHANISM FOR WRAPPING-MACHINES.

No. 881,084. Specification of Letters Patent. Patented March 3, 1908.

Original application filed September 13, 1905, Serial No. 278,338. Divided and this application filed February 11, 1907. Serial No. 356,807.

To all whom it may concern:

Be it known that I, ALBERT M. PRICE, a citizen of the United States, residing at Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Feeding Mechanism for Wrapping-Machines, of which the following is a specification.

An application for United States Letters Patent, Serial Number 278,338, filed by me September 13, 1905 has for its subject matter a machine for wrapping sticks of chewing gum and like articles of uniform size, said machine comprising among other mechanism, a magazine to receive the blocks, sticks or other articles to be wrapped, means for transferring said articles to a feeder wheel, a magazine for holding a quantity of wrappers previously cut to the proper size, and means for feeding the outer one of these wrappers to the proper positions to envelop the articles singly as they are delivered from the feeder wheel to a receiving wheel. This ast named wrapper-feeding mechanism forms the subject-matter of the present application which is a division of said application #278,338.

In the description of this invention while the article to be wrapped is designated "a piece of gum" it will be readily understood that this article is merely used for the purpose of illustration and that any article of suitable form and size may be used in the machine if desired.

In the accompanying drawings in which I have illustrated only such portion of the complete machine as is necessary to a proper understanding of the present invention, Figure 1, is a view in side elevation of that part of the machine embodying the feeding mechanism, Fig. 2, is a view in side elevation showing substantially the same parts, Fig. 3, is an enlarged detail view of the feeding mechanism, partly sectional and partly in side elevation, Fig. 4, is a detail view of a part of the label feed controller, Fig. 5, is a partial sectional view of the paper feed controller-pawl, Fig. 6, is an enlarged sectional view of part of the feeding wheel and part of the mechanism for feeding the wrappers thereto, Fig. 7, is a detail view in side elevation of the needle shown in Fig. 6. Fig. 8, is a section taken on the plane of the line 8—8 in Fig. 3. Fig. 9, is a partial section on the plane of the line 9—9 in Fig. 4. Fig. 10, is an elevation of the rolls for holding the wrappers on the feeding wheel. Fig. 11 is a detail in rear elevation, of parts of the driving mechanism.

The mechanism forming the subject of the present invention is arranged at the lower rear end of the machine and is adapted to hold a number of wrappers which have been previously cut to the size desired to be used in the wrapping and deliver them one at a time to the receiving-wheel. This mechanism comprises a magazine 77 having a bottom channel 78, formed therein, in which is mounted a screw-threaded shaft 79, journaled at its forward end in the journal bearing 80, and near its rear end in the journal bearing 81 and upon the rear end of which is mounted a suitable bevel-pinion 82, and a crank-arm 83. This shaft engages in a thread cut in the lower portion 84 of a follower 85, and serves to advance the latter to move the mass of wrappers into engagement with frictional feed-rollers 86 (Fig. 6) which are mounted upon a shaft 87, carried in journal bearings 88 and 89, (Fig. 8) formed upon the ends of a yoke 90. The yoke is provided with two arms 90 formed integral with a sleeve 91, which is mounted upon a stud 92, which is in turn suitably secured to the frame 1, by a nut 93. The forward end of the magazine is mounted by means of the downwardly projecting portions 94 upon the hollow sleeve 91 of the yoke 90 and is held in such position by caps 95. The yoke 90 is mounted so that it can turn freely on the stud 92 and within its bearings formed in the projections 94 of the wrapper magazine. A rearwardly extending arm 96 is rigidly mounted upon the sleeve 91 of the yoke and is adapted to engage a lug 97 mounted on the bottom of the magazine (Figs. 1 and 3). A pin extends from the arm 96 through the lug 97, and is provided on its underside with a coiled spring 99, and a thumb-nut 100 for adjusting the tension of the spring. By this means, the rollers 86 are maintained in engagement with the paper with sufficient pressure to cause them to pull the wrappers off, one at a time, from the front of the mass of paper as the rollers revolve. The shaft 87 is driven by a shaft 101 through the medium of of a shaft 102, having at each end thereof a universal coupling. The shaft 101 has

mounted thereon a pinion 103, (Figs. 2 and 11) which meshes with a gear 104, mounted on a shaft 105, on the other end of which is mounted a gear 106, meshing with the gear 72. The rollers 86 have their surfaces composed partly of rubber or other material and partly of a smooth non-adhesive material (Figs. 3 and 6) and their circumferences are so proportioned to the length of the wrapper that the rear end of the wrapper will, as it is removed, come in contact with the non-adhesive portion only. By this construction, the next sheet will not be started as soon as the preceding sheet is removed, but only when the rubber or frictional surface comes in contact with it.

It is a well known fact that when an effort is made to remove the first of a plurality of sheets of paper by frictional means bearing against the surface of the first sheet, two or more sheets will, in all probability, be removed, unless some means is provided for holding all but the first sheet.

In my present invention I provide such means in the form of a needle 107, which is mounted at the forward end of the magazine 77, and against which the sheets of paper or wrappers are forced by the follower 85. This needle is of sufficient length to extend through a number of the sheets and puncture them a slight distance from the lower edge. While the friction of the roller against the first sheet is sufficient not only to overcome the resistance of the friction between the first and second sheets, but also to tear out the small portion necessary to release the sheet from the needle, the friction between the first and second sheet would not be sufficient to overcome the friction between the second and third sheets and also to tear the second sheet from the needle. This is due to the fact that the frictional pull of the rubber against paper is greater than that of paper against paper. It has been found, however, that if a stationary needle is used, the point of the needle as it is forced through one sheet into the next tends to draw the fine vegetable fibers of which the paper is composed, into the perforation which is being made in the second sheet. These fibers are apparently carried by the point of the needle from one sheet to the next until the needle becomes clogged and is prevented from fulfilling its function. In this device however the needle is mounted upon a small rotating shaft 108, (Figs. 6 and 7) supported in a journal 109 and provided with a bevel-gear 110, (Figs. 6 8, and 11) which is adapted to mesh with a beveled gear 111, mounted upon the end of a shaft 112, connected with and driven by the shaft 105, through the medium of a driving rod 113, (Fig. 11), and the universal couplings 114 and 115, one at each end of the rod 113. By this means the needle is rotated. This causes its point constantly to clear itself of the small fibers which would otherwise stick to it, as the paper is torn therefrom. It will be understood that any form of point adapted to bore into the paper may be used, but the screw-threaded form shown in Fig. 13 is preferred.

In order that the shaft 79 may be rotated and thereby advance the follower 85, the following mechanism is provided. A rod 116 (see Figs. 3 and 4) is provided at one end with a collar 117, mounted upon an eccentric 118, carried by a shaft 47. The opposite end of the rod 116 is slotted, as at 119, whereby it will fit over a shaft 120, of a bevel-gear 121 and be supported thereby. The end of this rod 116 is provided with an upwardly extending projection 122, on which is pivotally mounted a pawl 123 (shown more particularly in Fig. 5) adapted to engage the teeth on a notched wheel 124, on the shaft 120. As the rod 116 is reciprocated by the eccentric 118, it reciprocates the pawl, and as the pawl moves forward, it rotates the notched wheel 124 and therewith the bevel-gear 121, which, in turn, rotates the bevel-gear 82 and the screw-threaded shaft 79.

As the sheets of paper constituting the outer wrappers vary in thickness, it is impossible to arrange the pitch of the screw-thread on the shaft, so that it will feed the follower 85 forward exactly the thickness of one sheet of paper for every reciprocation of the rod 116. It is not even possible to get this mechanism to average correctly for any given length of time, as different lots of paper will average a different thickness to the sheet. For this reason the pitch of the screw on the shaft 79 is made approximately twice as great as would be necessary were it actuated by each reciprocation of the rod 116, and the following regulating mechanism is provided. A rod 125 is connected to the yoke 90 by an arm 126 (Fig. 8) and at its opposite end is provided with a slot 127 (Fig. 4) which engages over a circular projection 128, mounted upon the pawl 123. A hole 130 in the pawl 123 (Fig. 5) is made oblong to enable it to have a slight reciprocating motion on a screw 129, on which the pawl is pivoted. A coiled spring is mounted in the hole 130, and held in position by screw 131, so that normally the pawl is held rearwardly against the screw 129. When the mass of wrappers is carried forward by the follower 85, it bears against the rollers 86 and as the pressure increases, the rollers 86, together with the yoke 90, are pressed forward in opposition to the tension of the spring 99. The yoke 90 carries forward the rod 125 and when this rod is drawn forward to such an extent that it intercepts the backward motion of the pawl 123, at the rear end of the stroke of the rod 116, the pawl 123 will fail to engage the next consecutive tooth of the wheel 124, as shown in Fig. 4.

By this arrangement the rotation of the toothed wheel, 124 is intermittent and only occurs when the tension of the paper becomes slightly less than desired, and it becomes necessary to move the follower 85 forward slightly.

At 132 is shown the continuously rotating receiving-wheel which is mounted upon the shaft 133 driven by the gear 72. The construction of and mode of operation of this receiving-wheel are more fully described in my former application. As the wrappers leave the feed-rollers 86, it is necessary that some means be provided to guide and hold the same upon the receiving-wheel 132, until the gum is delivered thereto. Mounted upon the outer end of the stud 92, upon which is carried the yoke 90, is an arm 134 (Fig. 1) which carries a frame 135, within which are supported suitable resilient rollers 136 each adapted to bear against the periphery of the receiving-wheel 132, and hold the paper wrappers thereon. The frame 135 comprises a pair of sides 137 and 138 (Figs. 6 and 10) having backwardly extending tail-pieces 139 at their lower ends and between which are mounted rollers 136. These rollers bear upon the periphery of the receiving-wheel 132, and as each paper wrapper is carried up by the feed-rollers 86 the upper edge thereof is guided by the tail-pieces 139 and the paper passes under the rollers 136 and is held by them upon the periphery of the receiving-wheel.

What I claim as new is:—

1. In a paper feed, the combination with frictional means for removing the first of a plurality of sheets of paper, of an intermittently operated mechanism for pressing said sheets against said frictional means, means connected with said frictional means for stopping the mechanism when the pressure of the paper against said frictional means exceeds a predetermined pressure and for starting the mechanism when the pressure falls below a predetermined pressure, and a rotating needle adapted to penetrate the first two or more of the sheets near the edge thereof to prevent the removal of more than one sheet at a time.

2. In a paper feed, the combination with means for removing the first of a plurality of sheets of paper, of a rotating needle adapted to penetrate the first two or more sheets at a point near their edge to prevent the removal of more than one sheet at a time.

3. In a paper feed, the combination with means for removing the first of a plurality of sheets of paper, of a rotating boring needle adapted to penetrate the first two or more sheets near their edge to prevent the removal of more than one sheet at a time.

4. In a paper feed, the combination with means for removing the first of a plurality of sheets of paper, of a rotating needle having the point thereof screw threaded, adapted to penetrate the first two or more sheets near the edge thereof to prevent the removal of more than one sheet at a time.

5. In a paper feed, the combination with frictional means for removing the first of a plurality of sheets of paper, of a rotating needle adapted to penetrate two or more of said sheets near their edge to prevent the removal of more than one sheet at a time.

6. In a paper feed, the combination with frictional means for removing the first of a plurality of sheets of paper, of a needle rotating in one direction adapted to penetrate the first two or more sheets near the edge thereof and prevent the removal of more than one sheet at a time.

7. In a paper feed, the combination with frictional means for removing the first of a plurality of sheets of paper, of a needle continuously rotating in one direction adapted to penetrate two or more of the sheets near their edge to prevent the removal of more than one sheet at a time.

8. In a paper feed, the combination with frictional means for removing the first of a plurality of sheets of paper, of a rotating needle to penetrate two or more of the sheets near their edge to prevent the removal of more than one sheet at a time and having the point thereof roughened to aid the same in penetrating the sheets.

9. In a paper feed, the combination with frictional means for removing the first of a plurality of sheets of paper, of a needle for penetrating the first two or more sheets near their edge to prevent more than one sheet from being removed at a time, having a screw-threaded point rotating continuously in one direction.

10. In a paper feed, the combination with a frictional roller for removing the first of a plurality of sheets of paper, of an intermittently operated mechanism for pressing the sheets against said roller, means connected with said roller for stopping the mechanism when the pressure of the paper against said roller exceeds a predetermined pressure, and for starting said mechanism when the pressure falls below a predetermined pressure and a rotating needle adapted to penetrate the first two or more of the sheets near the edge thereof to prevent the removal of more than one sheet at a time.

11. In a paper feed, the combination with a frictional roller for removing the first of a plurality of sheets of paper, of a rotating needle adapted to penetrate two or more of said sheets near their edge to prevent the reremoval of more than one sheet at a time.

12. In a paper feed, the combination with a frictional roller for removing the first of a plurality of sheets of paper, of a needle rotating in one direction adapted to penetrate the first two or more sheets near the

edge thereof to prevent the removal of more than one sheet at a time.

13. In a paper feed, the combination with a frictional roller for removing the first of a plurality of sheets of paper, of a needle continuously rotating in one direction adapted to penetrate two or more of the sheets near their edge to prevent the removal of more than one sheet at a time.

14. In a paper feed, the combination with a frictional roller for removing the first of a plurality of sheets of paper, of a rotating needle, adapted to penetrate two or more of the sheets near their edge to prevent the removal of more than one sheet at a time, and having the point thereof roughened to aid the same in penetrating the sheets.

15. In a paper feed, the combination with a frictional roller for removing the first of a plurality of sheets of paper, of a needle for penetrating the first two or more sheets near their edge to prevent more than one sheet from being removed at a time, having a screw-threaded point and adapted to rotate continuously in one direction.

16. In a paper feed, the combination with frictional means for removing the first of a plurality of sheets of paper, of a rotating needle for penetrating the first two or more sheets to prevent the removal of more than one sheet at a time, having its point constructed to enable it to bore into said sheets.

17. In a paper feed, the combination with frictional means for removing one sheet at a time from a plurality of sheets of paper, a spring-tension means for holding said frictional means against the paper, a feeding mechanism for pressing said sheets against the frictional means in opposition to said spring-tension means, means connected with said frictional means for retarding the feeding mechanism when the pressure of the sheets against the frictional means forces the same beyond its normal position, and a rotating needle adapted to penetrate two or more of the sheets near the edge thereof to prevent the removal of more than one sheet at a time.

18. In a paper feed, the combination with a frictional roller for removing one sheet at a time from a plurality of sheets of paper, of a spring-tension means for holding said roller against the paper, a feeding mechanism for pressing said sheets against the roller in opposition to said spring-tension, means connected with said roller for retarding the feed mechanism when the pressure of the sheets against the roller forces the same beyond its normal position, and a rotating needle adapted to penetrate the first two or more sheets near one edge thereof to prevent the removal of more than one sheet at a time.

19. In a paper feed, the combination with a continuously rotating frictional roller for removing one sheet at a time from a plurality of sheets of paper, of a spring-tension means for holding said roller against the paper, a feeding mechanism for pressing the sheets against the roller in opposition to the spring-tension means, means connected with the roller for retarding said feeding mechanism when the pressure of the sheets against the roller forces the same beyond its normal position, and a rotating needle adapted to penetrate the first two or more sheets near their edge to prevent the removal of more than one sheet at a time.

20. In a paper feed, the combination with a frictional roller, for removing one sheet at a time from a plurality of sheets of paper, having a longitudinal portion of the surface thereof composed of non-frictional substance to provide a definite time during its rotation for the starting of each sheet, of a rotating needle adapted to penetrate the first two or more sheets near their edge to prevent the removal of more than one sheet at a time.

21. In a paper feed, the combination of a frame, a shaft mounted thereon, a yoke secured to the shaft, a rotating frictional roller journaled in the ends of the yoke arms, a spring-pressed arm secured to the shaft at substantially a right angle to the yoke to press the roller against a plurality of sheets of paper, feeding mechanism for pressing the paper toward the roller in opposition to the spring pressure, and a rotating needle for penetrating two or more sheets of paper to prevent the removal of more than one sheet of paper at a time.

22. In a paper feed, the combination of a frame, a feed screw journaled therein, rotating means for said screw, a follower threaded on the feed screw to actuate a pack of sheets of paper, a spring-pressed rotating friction roller mounted to press upon the pack of sheets of paper in opposition to the feed movement of the follower, means for varying the speed of rotation of the feed screw dependent upon the thickness of the pack of sheets, and a rotating needle arranged to penetrate two or more sheets of the paper to prevent the removal of more than one sheet at a time.

23. In a paper feed, the combination of a frame, a frictional roller mounted therein and spring-pressed toward a pack of sheets of paper, feeding mechanism for pressing the pack of sheets toward the roller, ratchet mechanism for actuating the feeding mechanism, a rod connecting the ratchet mechanism with the frictional roller whereby the ratchet mechanism is temporarily rendered inoperative when the pack of sheets is abnormally thick, and a rotating needle for penetrating the first two or more sheets of the pack to prevent the removal of more than one sheet at a time.

24. In a paper feed, the combination of a frame, a shaft mounted thereon, a yoke secured to the shaft, a rotary frictional roller

journaled in the ends of the yoke arms, a spring-pressed arm secured to the shaft at substantially a right angle to the yoke to press the roller against a plurality of sheets of paper, a feed screw journaled in the frame, a follower threaded on the feed screw to press a pack of sheets toward the roller, means for rotating the feed screw, connection with the roller which render such rotating means temporarily inoperative when the pack of sheets is too thick, and a rotating needle for penetrating the first two or more sheets of the pack to prevent the removal of more than one sheet at a time.

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

ALBERT M. PRICE.

Witnesses:

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