No. 879,311. PATENTED FEB. 18, 1908.

R. L. PATTERSON.

TUBE TRANSFERRING MECHANISM.

APPLICATION FILED DEC. 5, 1902.

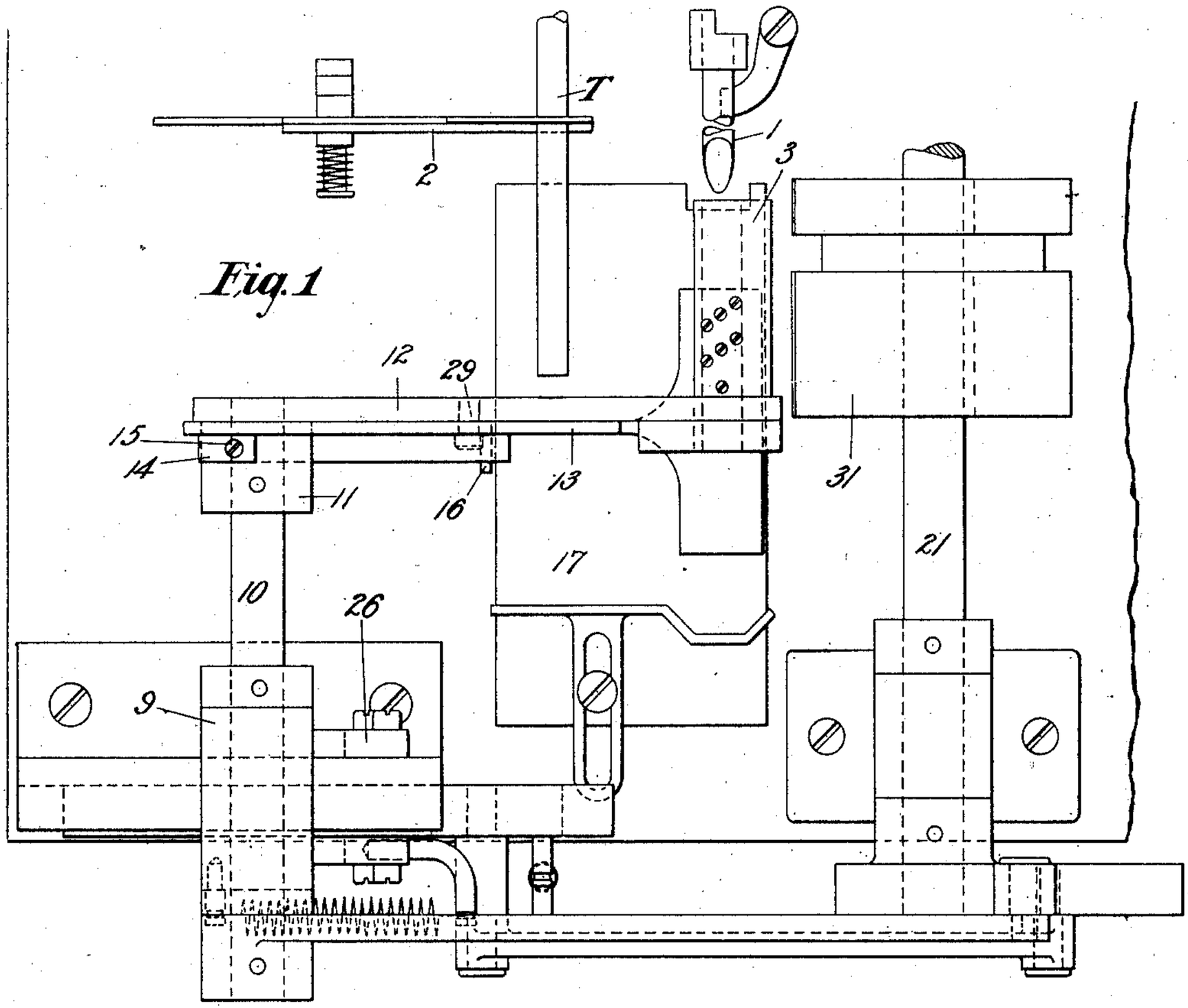

Fig. 1

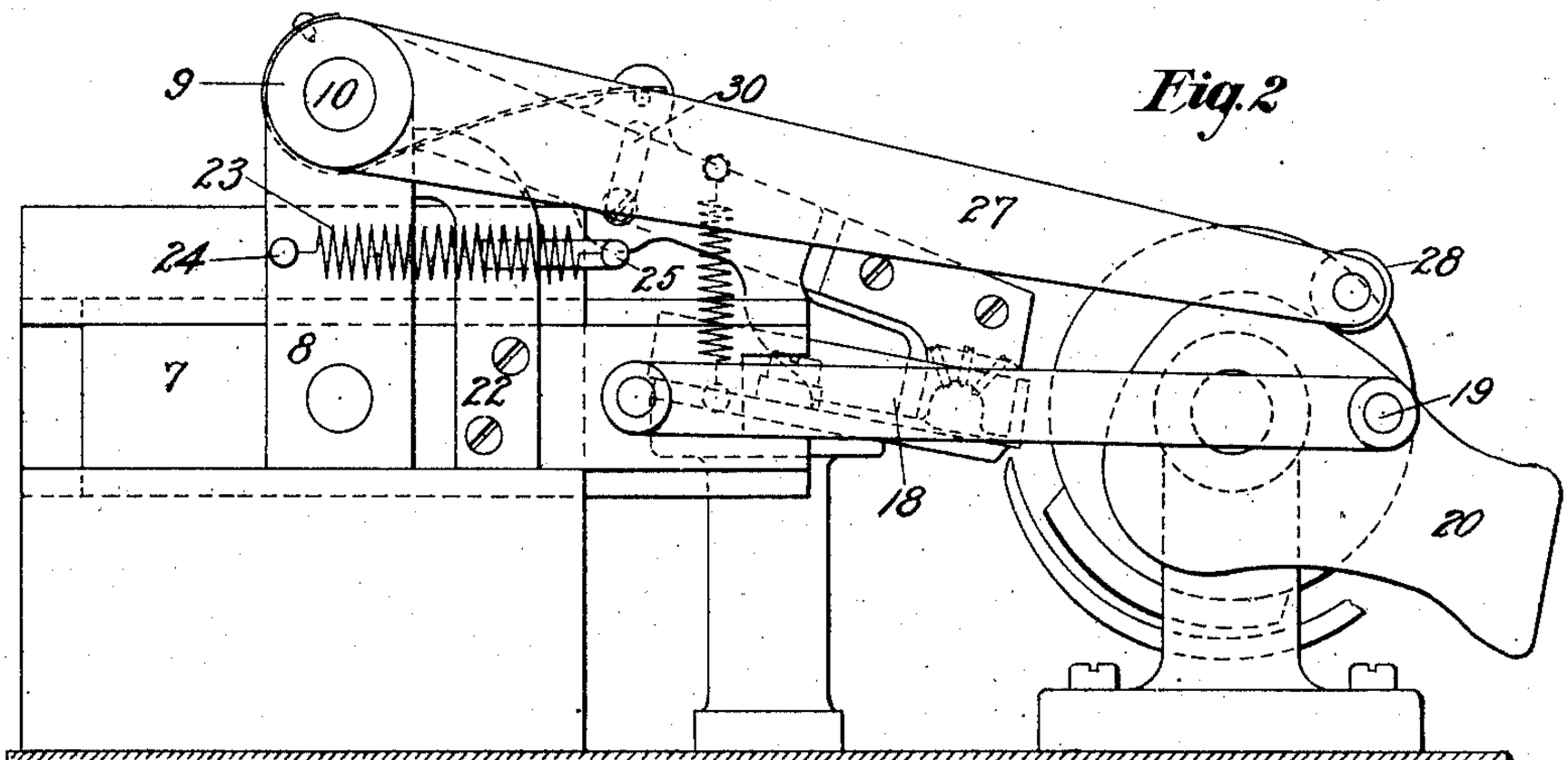

Fig. 2

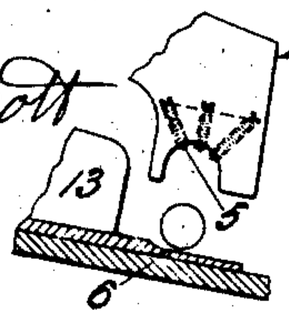

Fig. 3

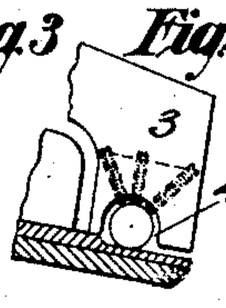

Fig. 4

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UNITED STATES PATENT OFFICE.

RUFUS L. PATTERSON, OF NEW YORK, N. Y., ASSIGNOR TO THE AMERICAN TOBACCO COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TUBE-TRANSFERRING MECHANISM.

No. 879,311. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed December 5, 1902. Serial No. 134,006.

To all whom it may concern:

Be it known that I, RUFUS L. PATTERSON, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Tube-Transferring Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in tube transferring devices for cigarette machines. In making cigarette tubes which are provided with mouth-pieces it is customary to form a continuous tube, and to cut it into lengths, the tube lengths being then transferred by a suitable mechanism to the point where the mouth-piece, which has been previously formed by suitable mechanism, is inserted into the tube.

Mouth-pieces are usually formed of stout paper spirally coiled, and it is desirable, in the manufacture of high grade cigarettes, in assembling the mouth pieces and the tube lengths, to so position the seam formed by the overlapping edges of the paper forming the tube with respect to the edge of the lap which forms the outer coil of the mouth-piece, that the cigarette apparently presents but a single seam extending from end to end. In order to effect this the seam of the tube must exactly correspond in position with the lap of the mouth-piece, otherwise the edge of the outer lap of the mouth-piece coil will show through the thin cigarette paper and there will apparently be two seams extending across the mouth-piece of the cigarette.

The present invention has for its object to produce a transferring device for cigarette tubes which shall receive the tube lengths with the seam in a given position and shall maintain the tube lengths in fixed position with respect thereto, so that when the tube is presented to the mouth-piece inserting and presenting mechanism, the edge of the lap of the mouth-piece will underlie the seam of the tube.

With this and other objects in view the invention consists in certain constructions and in certain parts, improvements and combinations as will be hereinafter fully described and then specifically pointed out in the claims hereunto appended.

In the accompanying drawings:—Figure 1 is a plan view of so much of a machine for forming cigarette tubes with mouth-pieces as is necessary to a full understanding of the invention. Fig. 2 is a side elevation of the construction shown in Fig. 1, and Figs. 3 and 4 are detail views.

The machine which has been selected to illustrate the invention is a machine which in its general construction is of a well-known type. In this machine, the advancing endless tube is indicated at T, the tube forming devices being omitted from the illustration as not necessary to an understanding of the invention. The mouth-piece forming devices are also omitted from the illustration, but the mouth-piece presenting device, which consists of the usual introducing tube, is illustrated in the drawing and marked 1. The tube is cut into lengths by means of shears 2, the lengths being deposited within the range of action of the transferring device.

It will be understood, of course, that the endless tube T is always advanced with its seam in the same relative position with respect to the shears and the agencies to be hereinafter described which subsequently act upon it.

The transferring device may be varied widely in construction. It will, however, embody a transferring member which is provided with means for maintaining the tube lengths in fixed relation, so that the seam of the tube will register with the seam formed by the lap of the outer coil of the mouth-piece. The construction by which the transferring member effects the result referred to may be of any suitable character. As shown, this member consists of a block 3 provided with a recess 4. The inner surface of this recess will be provided with retaining means which may also be varied in character. Their construction will be such, however, that the tube will be kept from turning in the recess. As shown, the retaining means consist of a series of points 5, these points being formed by tapping screws through threaded openings in the block.

In the preferred form of the construction the device will be constructed in the form of a gripper, of which the transferring block 3, just described, forms one of the jaws, the other jaw consisting of a plate 6. The gripper jaws will be mounted so that they can be moved from the source of tube supply to the

tube presenting device, and mechanism will be provided to open and close the jaws. The construction by which the jaws are mounted so as to be moved in the manner described may be of any suitable form. As shown, there is provided a carriage which includes in its construction a slide plate 7, which moves in suitable ways in the frame of the machine. Pivoted to this slide plate 7 is a standard 8, said standard being provided with a long bearing 9 in which is journaled a shaft 10. This shaft has secured to one of its ends a hub 11 from which extends an arm 12, and to this arm 12 the block 3 is secured in any suitable manner, as by means of screws. The plate 6, before referred to, is secured to an arm 13 which is slipped over the hub 11, this arm 13 being held snugly up against the arm 12 by means of a spring 14, which is secured by a screw 15 to the hub. This spring has its other end carried around under the hub and rests on a pin 16 extending from the arm 13. This spring, therefore, not only serves to hold the arm 13 in position with respect to the arm 12 but it also holds the plate 6 down on a table which is secured to the frame of the machine.

The carriage may be reciprocated in any suitable manner. As shown, the slide 7 has pivoted to it a connecting rod 18, the other end of said rod being secured to a crank pin 19, which is mounted on a cam 20, said cam being fast on a shaft 21, which is one of the shafts of the machine. The slide 7 is provided with a stop 22 and the standard 8 is held against said stop by means of a spring 23 which is secured to a pin 24 on the standard and to a curved arm 25 which extends forward from the stop 22. A second stop 26 is provided which is secured to the part of the frame of the machine in which the ways of the slide 7 are formed, and this stop is struck by the long bearing 9, before referred to, just before the crank pin 19 passes the center. As the long bearing 9 strikes the stop 26 the bearing and shaft 10 are brought to a stop, but the slide 7 has a slight further movement as the crank pin passes the center, this movement being permitted by the pivoting of the standard 8 to the slide, so that the slide can travel forward slightly after the standard has come to rest. This construction permits a slight dwell in the movement of the transferring gripper, and it is at this time that the mouth-piece inserting device inserts the mouth piece in the tube length carried by the gripper.

When the transferring member is constructed in the form of a gripper, as shown, means are provided to open and close the gripper in order that the tube length may be inserted therein and discharged therefrom. The means for opening and closing the gripper may be of any suitable form. As shown, the shaft has secured to it an arm 27, said arm carrying a bowl 28 which runs on the surface of the cam 20 before referred to, this cam being of such shape that the arm 27 is raised to open the gripper at the time when the gripper is receiving the tube length from the shears and also at the time when the tube after having the mouth piece inserted therein is discharged from the gripper. It has been before stated that the arm 12 is fast on the shaft 10. This arm has projecting from it a pin or stud 29 which takes into a slot 30, clearly shown in dotted lines in Fig. 2, in the arm 13. This slot is of such a length as to enable the arm 12 to move so that the gripper may receive and discharge the tube length without raising the plate 6. When, however, the gripper is thrown back by hand for examination, the two jaws will be raised together.

In the operation of the construction, the end of the tube is positioned in the gripper after which the shears operate to cut off a tube length. The seam of the tube is, of course, in a determined position and the tube length is maintained in a fixed position with relation to the gripper and the seam by means of the points or rugosities 5 before described. It will be understood that these points are not sufficiently long to penetrate the tube but rest lightly on it and keep it from turning. After the grippers have closed upon the tube length the carriage is moved forward by the mechanism described and the tube mechanism is positioned in front of the inserting tube which is then operated by means not shown, to insert the mouth piece in the tube length, the lap of the mouth piece registering exactly with the seam in the tube. After the mouth piece has been inserted in the tube, the tube is discharged into a re-rolling device 31 of a well-known construction.

The devices herein shown and described for supporting and operating the tube transferring device are substantially the same as those disclosed in the patent to Harnisch, No. 716,537, and the tube and mouth-piece forming device may be the same as those disclosed in said patent. Reference is accordingly made to said patent for a fuller description of the operation of the various parts of the machine should such a description be deemed necessary.

While the construction which has been described illustrates a preferred form of the transferring device, it is to be understood that the invention may be embodied in transferring devices which differ widely from the one which has been shown and the invention, therefore, is not to be limited to the precise construction hereinbefore described.

What is claimed is:—

1. The combination with a mouth-piece presenting device, of a tube transferrer provided with means for maintaining the tube

lengths in fixed relation to said transferrer, a source of tube supply having means for presenting tubes to the transferrer with their seams in a fixed relation, and means for moving the transferrer between the presenting device and the source of tube supply, substantially as described.

2. The combination with a mouth-piece presenting device, of a tube transferrer provided with means for maintaining the tube lengths in fixed relation to said transferrer, a source of tube supply having means for presenting tubes to the transferrer with their seams in a fixed relation, and means for reciprocating the transferrer between the presenting device and the source of tube supply, substantially as described.

3. The combination with a mouth-piece presenting device, of a tube transferring jaw provided with means for holding the tube lengths in fixed relation thereto, a source of tube supply having means for presenting tubes to the transferring jaw with their seams in a fixed relation to said transferring jaw, and means for moving said jaw between the source of tube supply and the mouth-piece presenting device, substantially as described.

4. The combination with a mouth-piece presenting device, of a tube length transferrer comprising a pair of gripper jaws, a source of tube supply having means for presenting tubes to the jaws with their seams in a fixed relation to said jaws, and means for moving said jaws between the source of tube supply and the mouth-piece presenting device, substantially as described.

5. The combination with a mouth-piece presenting device, of a tube length transferrer comprising a pair of gripper jaws, one of which is provided with means for maintaining the tube lengths in fixed relation thereto, a source of tube supply having means for presenting tubes to the jaws with their seams in a fixed relation to said jaws, and means for moving said jaws between the source of tube supply and the mouth-piece presenting device, substantially as described.

6. The combination with a mouth-piece presenting device, of a carriage, tube gripper jaws on the carriage, and means for reciprocating the carriage, substantially as described.

7. The combination with a mouth-piece presenting device, of a carriage, a pair of tube gripper jaws on the carriage, one of said jaws being provided with means for maintaining the tube lengths in fixed relation thereto, and means for reciprocating the carriage, substantially as described.

8. In a tube length transferring device, the combination with a transferring member provided with means for holding a tube length in fixed relation thereto, of operating devices, substantially as described.

9. In a tube length transferring device, the combination with a transferring member having a roughened surface, the member being long enough and the surface being of sufficient extent so that the tube length is engaged thereby at successive points along its length, of operating devices.

10. In a tube length transferring device, the combination with a transferring member consisting of a block having a curved recess therein, said recess being provided with a roughened surface, of operating devices, substantially as described.

11. In a tube length transferring device, the combination with a transferring member consisting of a block having a curved recess therein, said recess being provided with a series of holding points, of operating devices, substantially as described.

12. The combination with a mouth-piece presenting device, of a tube transferring device comprising a pair of gripper jaws, one of said jaws consisting of a block having a curved recess provided with a series of holding points, a carriage to which said jaws are connected, means for reciprocating the carriage, and means for opening and closing the jaws, substantially as described.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

RUFUS L. PATTERSON.

Witnesses:
SYDNEY I. PRESCOTT,
M. MANLY WHEDBEE.