

No. 863,103.

PATENTED AUG. 13, 1907.

A. SHEDLOCK.
ROLLING MACHINE.
APPLICATION FILED DEC. 5, 1902.

2 SHEETS—SHEET 1.

Fig. 1

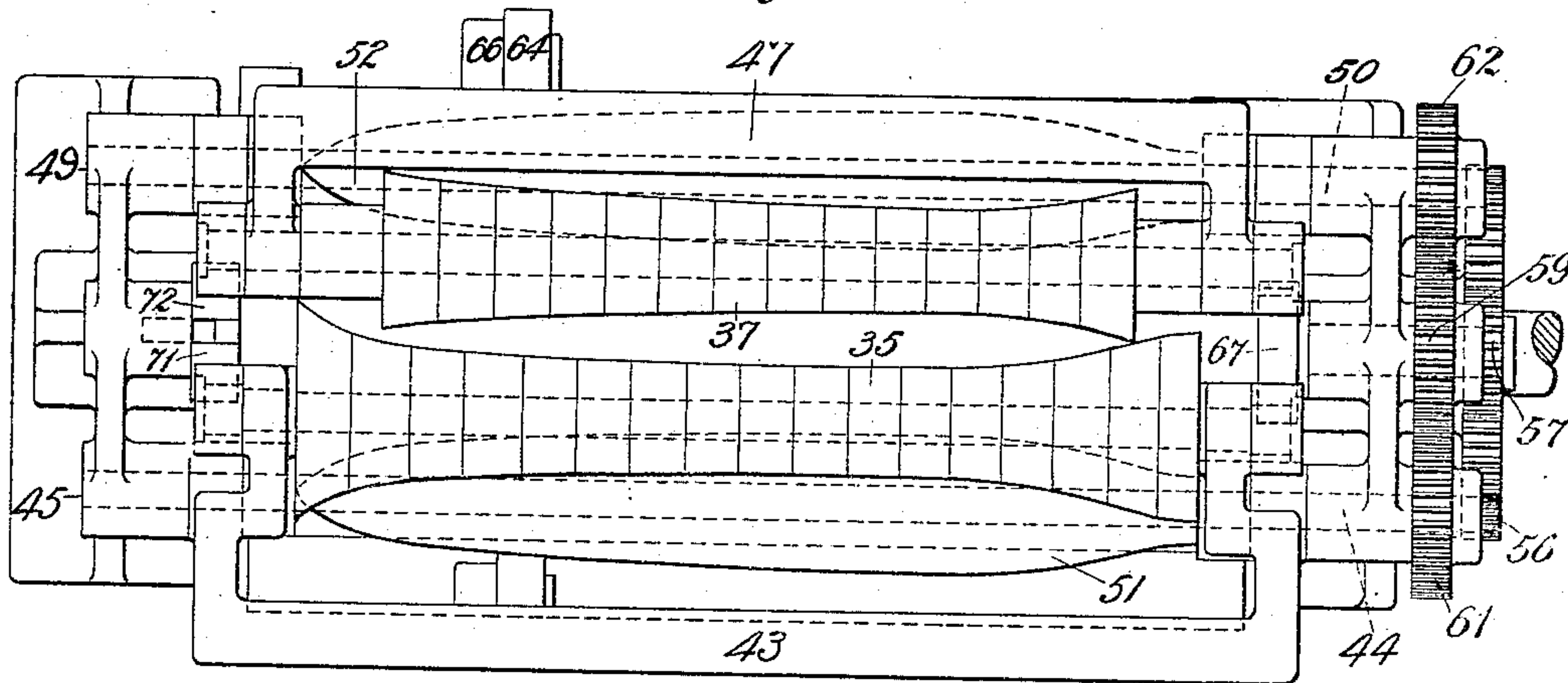
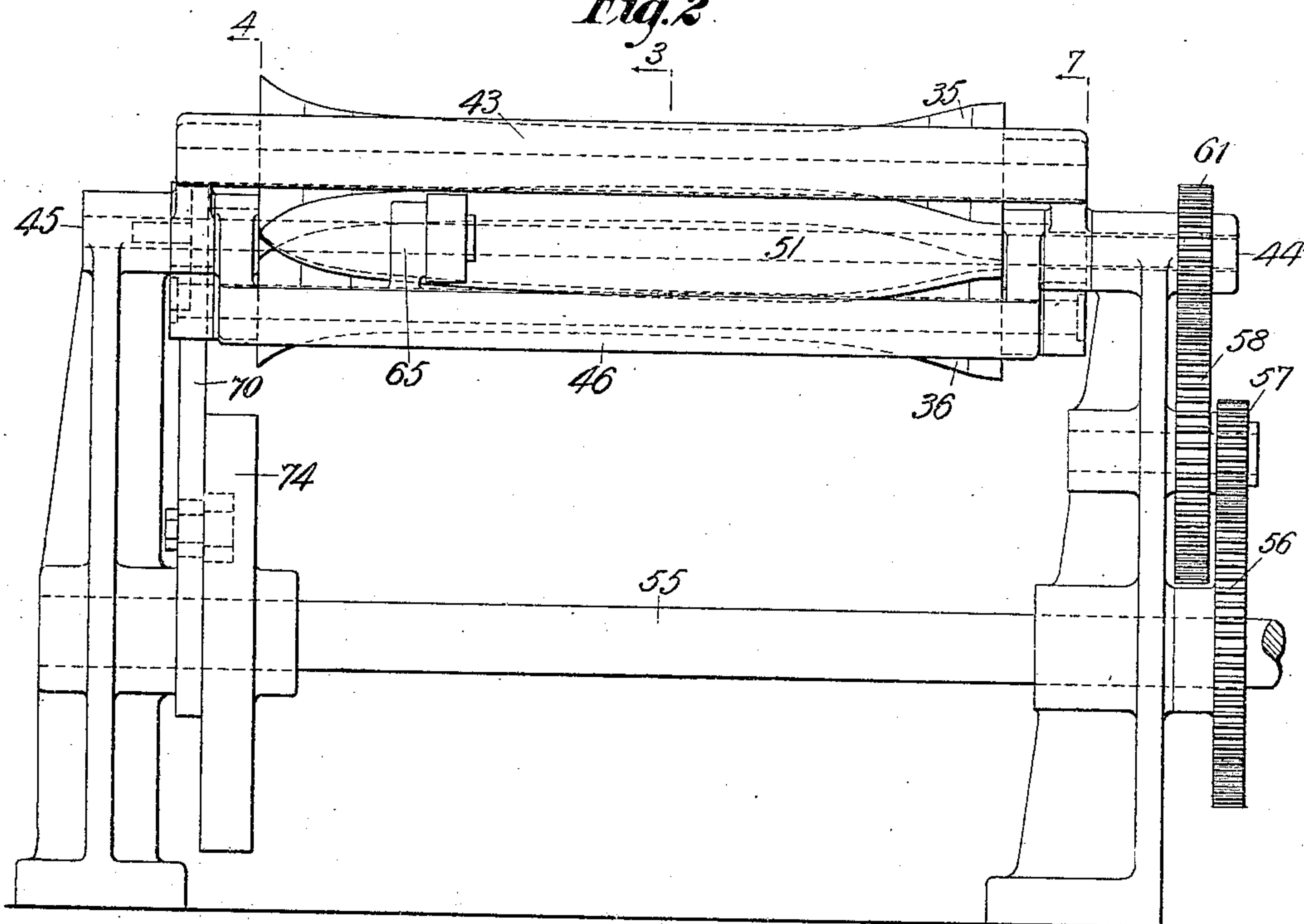


Fig. 2



Attest
Sydney Prescott
A. White

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Inventor

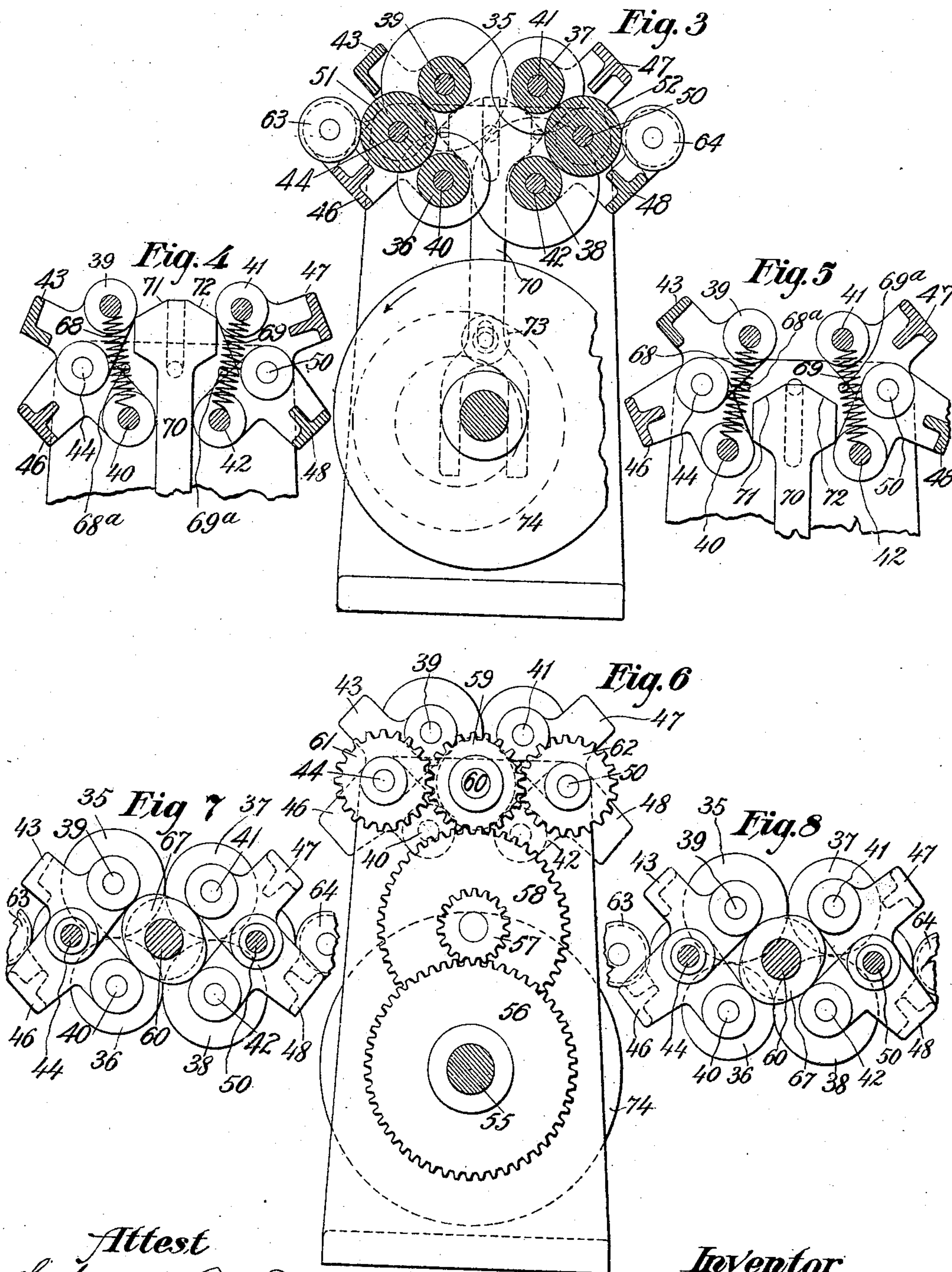
Alfred Shedlock
by Philipp Sauer, Recd & Connolly
Attys

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2 SHEETS—SHEET 2.



Attest
Sydney J. Prescott
A. White

Inventor
Alfred Shedlock
by Philipp Sawyer, Rec. Kennedy
attys

UNITED STATES PATENT OFFICE.

ALFRED SHEDLOCK, OF JERSEY CITY, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE AMERICAN TOBACCO COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

ROLLING-MACHINE.

No. 863,103.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed December 5, 1902. Serial No. 133,999.

To all whom it may concern:

Be it known that I, ALFRED SHEDLOCK, a citizen of the United States, residing at Jersey City, county of Hudson, and State of New Jersey, have invented certain new and useful Improvements in Rolling-Machines, 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 rolling machines.

In certain rolling machines in which rolls are employed to rotate an article to apply a wrapper thereto, it is customary to drive the rolls at the same surface speed. In applying wrappers, however, to articles of varying diameters, such, for instance, as a cigar bunch, if the rolls are all driven at the same surface speed, the different parts of the bunch are subjected to different degrees of torsion, so that the bunch tends to become twisted or broken. In order to avoid the objections which exist to this class of machines it has been proposed to make the bunch rotating devices in the form of flexible rollers which are shaped to correspond with the bunch and are integral from end to end, and it has also been proposed to make the bunch rotating devices in the form of groups of rollers which inclose the bunch, all the rollers of one group being driven and the rollers of the remaining groups being left free to rotate idly by friction against the bunch. The first class of these suggested machines is objectionable both on account of the initial cost of the rollers and the cost of maintaining them in operation, and the second class of the proposed machines is objectionable for the reason that they do not entirely relieve the bunch from the torsional strain.

Furthermore, in rolling machines heretofore constructed for wrapping cigars or analogous articles, in which the bunch is rotated by rollers, it has been customary to maintain these rollers in fixed relation to the bunch during the wrapping operation. It is desirable, however, in wrapping cigars, that the bunch rolling devices be given a movement to work up or manipulate the filler as the wrapper is being applied thereto.

It has also been customary in machines for applying wrappers to cigars in which the bunch is inclosed by the bunch rotating devices, to either close said devices positively upon the bunch and maintain them in fixed relation to the bunch during the operation of applying the wrapper or to give some or all of them a gradual movement toward the bunch as the wrapping proceeds, as, for instance, by causing them to be operated upon by springs during the wrapping operation, which springs force them toward the bunch. The bunches, however, vary in size, and if a large bunch is placed in

the rotating devices and the devices are then closed, either positively or by means of springs, it sometimes happens that the rolls are forced into the bunch and form a concave seat therein, so that when they begin to rotate they do not turn the bunch but simply rotate with respect to it.

Furthermore, in machines in which springs are employed, the force of the springs which tends to move the bunch rotating devices toward the bunch is resisted solely by the bunch itself, and it is exceedingly difficult to adjust the springs so as to cause them to exercise precisely the right amount of pressure during the wrapping operation.

The present invention has for one of its objects to produce a wrapping machine in which a bunch or other article is rotated to apply a wrapper thereto by devices which are arranged along the bunch or article and which make contact with different longitudinal parts thereof, said rotating devices being driven by a driver which corresponds generally in shape with the article to be wrapped and which operates to drive the devices at different speeds.

A further object of the invention is to produce a wrapping machine employing rolls for rotating the article to be wrapped, in which some or all of the rolls which operate upon the article are given a movement toward and away from it during the wrapping operation, in order to produce a manipulating effect upon the article.

A further object of the invention is to produce an improved wrapping machine in which a bunch or other article is rotated for the purpose of applying a wrapper thereto, and in which the said rotating devices are given a progressive movement toward the article during the operation of said devices, means being provided for positively controlling this progressive movement.

With these 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 one form of the machine illustrating the invention. Fig. 2 is a side elevation of the construction shown in Fig. 1. Fig. 3 is a sectional view on the line 3—3 of Fig. 2. Figs. 4 and 5 are detail views showing the bunching rolls in different positions. Fig. 6 is an end elevation of the machine illustrating the gearing employed. Figs. 7 and 8 are elevations, partly in section, illustrating the means for giving the rolls the manipulating movement, the parts being shown in different positions in the two figures.

The machine which has been selected to illustrate the invention may be used either for applying the binder to a cigar filling to form a bunch or to apply a wrapper to a bunch to make a cigar. The devices for rotating the filling or bunch, as the case may be, may be varied widely in construction. In the preferred form of the construction, and as shown, these devices will consist of rolls. As shown, four rolls, 35, 36, 37 and 38, are employed, though the number of rolls may be varied. When rolls are employed for rotating the bunch or filling, they will preferably be arranged to inclose the bunch or filling and each roll will consist of a series of independent sections, as is clearly indicated in Fig. 1, the roll sections being made of varying diameters so that the space which the rolls inclose may correspond in shape to the bunch which is to be operated upon. These roll sections may be supported in any suitable manner. As shown, the sections which compose the roll 35 are loosely mounted on a support 39, the sections which compose the rolls 36, 37 and 38 being similarly mounted on supports 40, 41 and 42. The supports referred to may be mounted in any desired manner, but, in the machine shown, they are movable mounted for reasons which will be stated hereafter. The support 39 is mounted in a bracket 43, which is pivoted at one end on a shaft 44, which will be hereinafter referred to, and at the other end on a stud 45, the stud and shaft being carried in the frame of the machine. The support 40 is carried by a bracket 46 which is journaled on the shaft 44 and the stud 45 before referred to. The supports 41 and 42 are carried by brackets 47 and 48, these brackets being mounted at one end on a stud 49, which is supported on the frame, and at the other end on a shaft 50, which will be hereinafter referred to.

The sections of each roll are driven independently and at varying surface speeds in order to avoid any torsional strains on the bunch. According to the present invention the driving of the sections of each roll is effected by means of a driver which generally corresponds in shape with the bunch or with the article which the machine is intended to operate upon. This driver may be varied in construction, but inasmuch as the machine is intended for making cigars, the driver has the general outline of a cigar. While the number of drivers may be varied, in the machine shown two drivers 51 and 52 are employed, the driver 51 operating to drive the sections which compose the rolls 35 and 36, said rolls forming a set, and the driver 52 operating to drive the sections which compose the rolls 37 and 38, said rolls forming a set. The drivers may be constructed from any suitable material, such as wood or iron, but they will be preferably constructed of a flexible material, such as rubber, in order to give them a better driving action. These drivers may be mounted in the machine in any desired manner. As shown, however, the driver 51 is mounted on the shaft 44 before referred to, and the driver 52 is mounted on the shaft 50.

The shafts 44 and 50 may be driven by any suitable gearing. As shown, the main shaft 55 of the machine is provided with a gear 56 which meshes with a pinion 57 mounted on a stud suitably supported in one of the standards of the machine, said stud also serving to support a gear 58, which is turned by the pinion 57. This

intermediate gear 58 is in mesh with a gear 59, which is supported on a short shaft 60, suitably mounted in the frame. The gear 59 is in mesh with a gear 61 on the shaft 44, and a gear 62 on the shaft 50. When, as in the construction shown, the drivers operate to drive the roll sections directly, they should be held in close frictional contact with the roll sections. The shafts which support the drivers may be made sufficiently heavy so that when they are properly positioned in the frame they will hold the drivers against the roll sections. In the machine shown, however, additional devices are employed which act to hold the drivers against the roll sections and tend to prevent any spring in the shaft. These additional devices consist of rolls 63 and 64, the roll 63 cooperating with the driver 51 and the roll 64 cooperating with the driver 52. The roll 63 is mounted on a boss or bearing 65, which rises from the bracket 46 and the roll 64 is mounted on a boss 66 rising from the bracket 48.

With the construction as so far described, it will be seen that the cigar bunch or filler, when inclosed by the rolls, will have the different parts along its length in contact with roll sections which are in contact with, and are driven by, drivers which generally correspond in shape with the bunch. The roll sections will, therefore, move at different surface speeds, which correspond to the surface speeds of the different parts of the driver. The roll sections will not, therefore, tend to drive any part of the bunch at a speed faster than it should be driven, so that there is no tendency to twist it.

While the rolls which rotate the bunch may be arranged so that after the bunch has been inclosed by them, they remain in unvarying relation with respect to the axis of the bunch during the time when the bunch is being rotated, it is desirable that the rolls, whether composed of independent sections or not, be given a slight movement toward and away from the axis of the bunch during the time when the bunch is being rotated in order to manipulate and work up the filler. This movement of the rolls toward and away from the axis of the bunch may be effected by any suitable mechanism. In the construction shown, however, the shaft 60 before referred to, is provided with a cam 67 which is elliptical in shape, this cam being arranged to operate on the supports 39, 40, 41, and 42, said supports being preferably provided with the usual anti-friction rolls. As the cam 67 rotates, the pair of rolls 35, 38 will be moved away from the bunch and then toward it. The movement of these rolls in opposition to the cam being produced by any suitable means, as, for instance, by a spring 68, which connects the brackets 43 and 46. As the high portions of the cam 67 pass out of contact with the rolls 35, 38, they will pass into contact with the rolls 36, 37, thus moving these rolls away from the axis of the bunch. The returning movement of these rolls in opposition to the movement produced by the cam may be effected in any suitable manner, as by a spring 69, which connects the brackets 47, 48. Inasmuch as the brackets which carry these supports are mounted to turn under the action of the cam 67, on centers which correspond with the axes of the shafts of the drivers, the movement of the rolls produced by the cam does not operate to take the rolls out of driving contact with the drivers. The

cam 67 is driven at a sufficient rate of speed to produce a rapid movement of the rolls during the wrapping operation, so that the filling is worked up or manipulated by the action of the rolls. Since, furthermore, one pair of rolls 35, 38 is in contact with the bunch when the pair of rolls 36, 37 is out of contact with it and vice versa, the bunch is always firmly gripped and held between one pair of rolls.

While the devices which rotate the bunch may be closed upon the bunch in any suitable manner, in the construction shown this closure is effected by means of the springs 68, 69 before referred to stops 68^a and 69^a being, in the best constructions, provided to limit the inward movements produced by the springs. In the preferred construction, however, means are provided for preventing the springs from operating to give the rolls their full movement toward the bunch until after the bunch has begun to rotate. The means employed are preferably of such a character as to permit the rolls, under the action of the springs, to have a gradual closing movement which takes place during the rotation of the bunch so that the rolls during the rolling and manipulation of the bunch gradually approach closer to the center of the bunch; in other words, each time the rolls move toward the bunch in the manipulating movement, they move slightly closer to the center of the bunch. While these means may be variously constructed, as shown, the machine is provided with a slide 70 having an enlarged head, which is provided with two cam surfaces 71 and 72. This slide is forked at its lower end, the fork embracing the main shaft 55, and is provided with a cam roller 73 which operates in a suitably formed cam groove in the cam wheel 74 mounted on said shaft, the groove being generally indicated by the dotted lines in Fig. 3, though the exact conformation of the groove may be varied in accordance with the specific requirements made necessary by the machine in which the invention is embodied. The cam surfaces 71, 72 operate on the supports 39, 41 before described, the ends of said supports being preferably provided with the usual anti-friction rollers. The cam groove in the cam wheel 74 is of such a shape as to permit the slide 70 to have a somewhat rapid downward movement at the start in order that the springs 68, 69 may move the rolls 35, 37 into contact with the bunch and thereafter to permit the slide to move downward slowly so that the full movement of the rolls 35, 37 under the action of the springs is not completed until after the rotation of the bunch is well under way.

In the construction shown, the rolls are opened to receive the bunch by means of a slide 70, the open position of the rolls being illustrated in Fig. 4. The slide is then given a downward movement by the cam 74 which permits the rolls to close into wrapping position, after which a further downward movement of the slide opens the rolls to permit the wrapped cigar to drop from between the rolls.

While the mechanism which has been above described illustrates a preferred form of invention, it is to be understood that the mechanism may be embodied in a mechanism which differs widely therefrom.

While, furthermore, the machine in which the invention is embodied is a wrapping machine intended for the manufacture of cigars the invention may be

embodied in machines which can be applied to other uses.

The invention is not, therefore, to be limited to the specific construction which has been hereinbefore described nor to the specific use described.

It is also to be understood that certain parts of the construction embodying the invention are capable of use independent of other parts and that such independent use is contemplated.

What is claimed is:—

1. In a wrapping machine, the combination with a wrapping roll for rotating an article to be wrapped, of a for driving the roll and means for giving it a movement towards and away from the axis of the article during the wrapping operation, substantially as described.

2. In a wrapping machine, the combination with a wrapping roll for rotating an article to be wrapped, of a friction driver for rotating the roll, and means for giving the roll a movement towards and away from the article to be wrapped during the wrapping operation, substantially as described.

3. In a wrapping machine, the combination with a wrapping roll for rotating the article to be wrapped, of a friction driver, and means for oscillating the roll about the axis of rotation of the driver and toward and away from the article to be wrapped during the wrapping operation, substantially as described.

4. In a wrapping machine, the combination with a plurality of sets of rolls arranged to inclose the article to be wrapped, of a friction driver for each set, and means for moving rolls of each set about the axis of the driver and towards and away from the article to be wrapped during the wrapping operation, substantially as described.

5. In a wrapping machine, the combination with a plurality of sets of rolls arranged to inclose the article to be wrapped, of means for driving the rolls and for moving the opposing rolls of each set towards and away from the article to be wrapped during the wrapping operation, substantially as described.

6. In a wrapping machine, the combination with a plurality of rolls arranged to inclose the article to be wrapped, said rolls consisting of opposing rolls arranged in pairs, of means for successively moving the pairs of rolls towards and away from the article to be wrapped, substantially as described.

7. In a wrapping machine, the combination with a pair of friction drivers, of wrapping rolls driven thereby, said rolls being arranged to inclose the article to be wrapped and having opposing rolls arranged in pairs, and means for moving the pairs of rolls in succession about the axis of the driver and towards and away from the article to be wrapped, substantially as described.

8. In a wrapping machine, the combination with a plurality of pairs of opposing rolls arranged to inclose an article to be wrapped, of drivers lying on opposite sides of the space inclosed by the rolls, and means for moving the pairs of rolls in succession about the axes of the drivers and towards and away from the article to be wrapped, substantially as described.

9. In a wrapping machine, the combination with pairs of rolls arranged to inclose an article to be wrapped, of a rotating cam acting on the roll supports and moving the pairs of rolls successively toward and away from the article to be wrapped during the wrapping operation, substantially as described.

10. In a wrapping machine, the combination with a plurality of pairs of rolls arranged to inclose a central space, each roll consisting of independent sections, of a plurality of drivers in frictional contact with the rolls, said drivers corresponding in shape with the space inclosed by the rolls, supports in which the rolls are mounted, and a rotating cam operating upon the supports and moving the pairs of rolls in succession toward and away from the article to be wrapped and about the axes of the drivers, substantially as described.

11. In a wrapping machine, the combination with bunch rotating devices arranged to inclose a bunch, of means for giving a part of said devices a progressive inward move-

ment toward the bunch during the operation of the devices and for positively controlling said movement, substantially as described.

5 12. In a wrapping machine, the combination with a plurality of bunch rotating rolls arranged to inclose a bunch, of means for giving a part of said rolls a progressive inward movement toward the bunch during the operation of the rolls and for positively controlling said movement, substantially as described.

10 13. In a wrapping machine, the combination with a plurality of bunch rotating rolls arranged to inclose a bunch, of springs for giving a part of said rolls a progressive movement toward the bunch during the wrapping operation, and means for controlling the operation of the
15 springs, substantially as described.

14. In a wrapping machine, the combination with a plurality of bunch rotating devices, of means for giving said devices a manipulating movement during the wrapping operation, and means for giving some of said devices a
20 progressive movement toward the bunch during the wrapping operation and for positively controlling said movement, substantially as described.

15 15. In a wrapping machine, the combination with a plurality of bunch rotating rolls arranged to engage a bunch, of means for giving the rolls a manipulating movement, and means for giving some of the rolls a progressive

movement toward the bunch during the wrapping operation and for positively controlling said movement, substantially as described.

16. In a wrapping machine, the combination with a plurality of bunch rotating rolls arranged to inclose a bunch, of suitable supports therefor, means for vibrating the rolls to give them a manipulating movement towards and away from the bunch during the wrapping operation, and means for moving some of the rolls toward the bunch during the
30 wrapping operation, and means for positively controlling said movement, substantially as described. 35

17. In a wrapping machine, the combination with a plurality of bunch rotating rolls arranged to inclose a bunch, of suitable supports therefor, means for vibrating the rolls to give them a manipulating movement towards and away from the bunch during the wrapping operation, springs for moving some of the rolls toward the bunch, and a slide for positively controlling said movement, substantially as described. 40 45

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

ALFRED SHEDLOCK.

Witnesses:

GEO. H. SNYDER,
PERCY H. VINTEN.