No. 828,630. PATENTED AUG. 14, 1906.

E. SCOTT.

MACHINE FOR WRAPPING PAMPHLETS AND THE LIKE.

APPLICATION FILED NOV. 13, 1905.

3 SHEETS—SHEET 1.

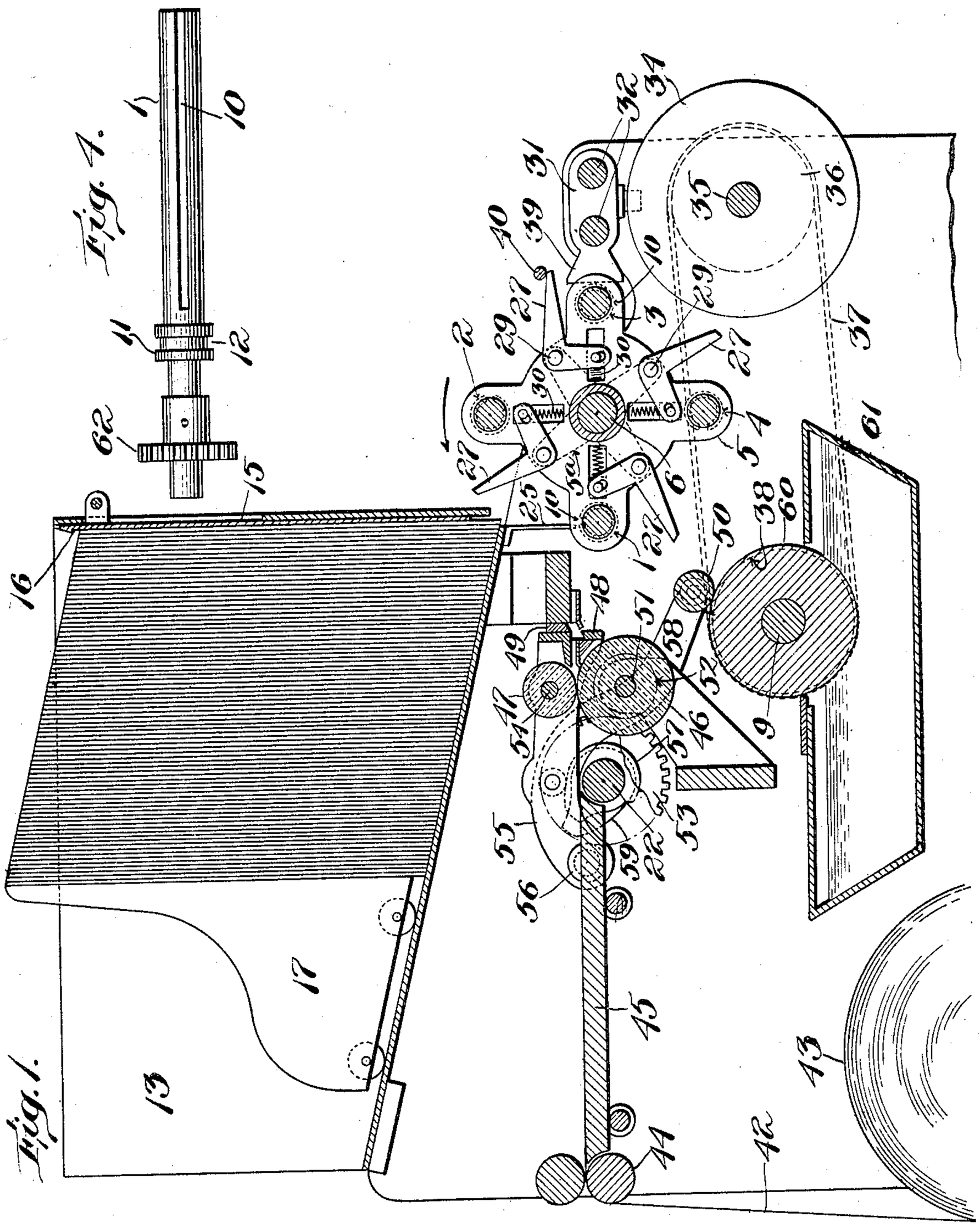

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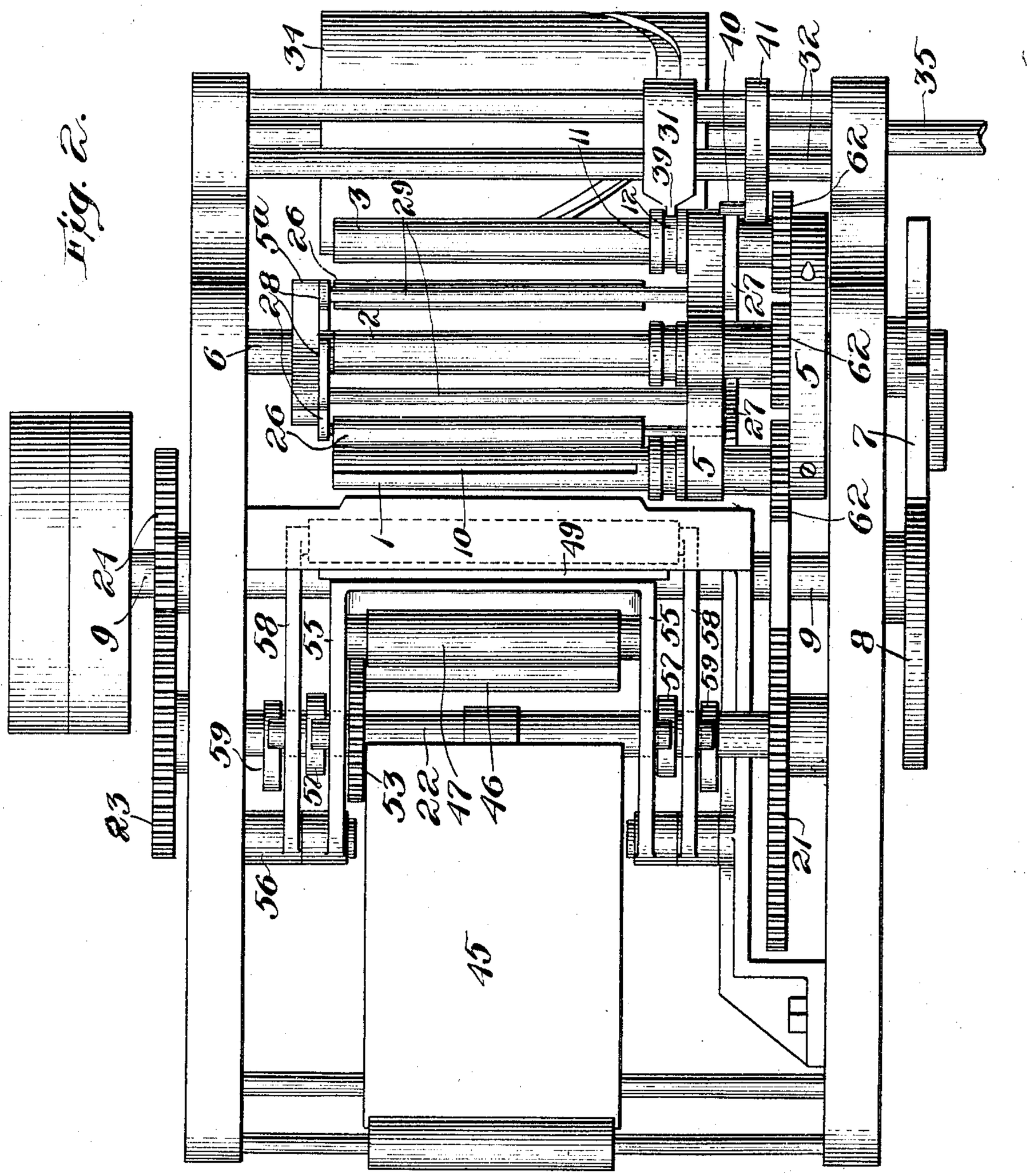
Fig. 2.



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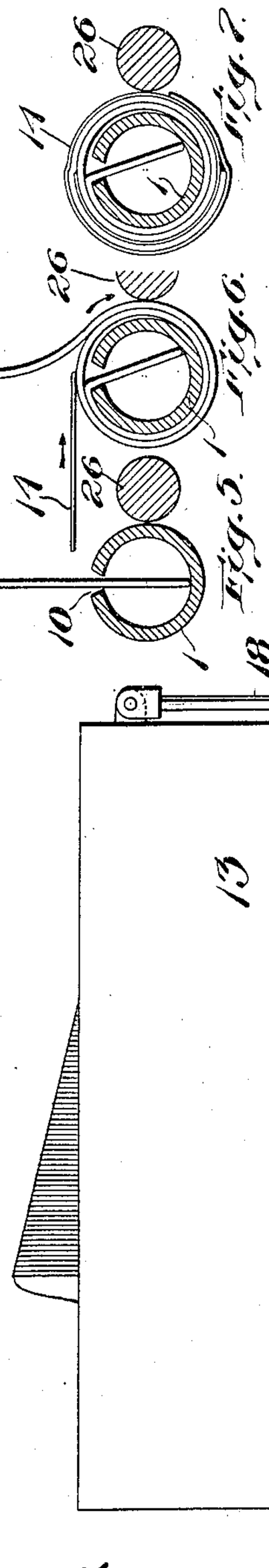

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UNITED STATES PATENT OFFICE.

ERNEST SCOTT, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO ERNEST R. KERSTEN, OF BOSTON, MASSACHUSETTS.

MACHINE FOR WRAPPING PAMPHLETS AND THE LIKE.

No. 828,630. Specification of Letters Patent. Patented Aug. 14, 1906.

Application filed November 13, 1905. Serial No. 286,990.

To all whom it may concern:

Be it known that I, ERNEST SCOTT, a citizen of the United States of America, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Machine for Wrapping Pamphlets and the Like, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation, partly in section, of a machine for wrapping pamphlets and the like embodying one form of my invention. Fig. 2 is a plan view of the machine shown in Fig. 1 with the pamphlet-hopper removed. Fig. 3 is a side elevation of the machine shown in Fig. 1. Fig. 4 shows detached one of the wrapping-mandrels of the machine shown in Fig. 1. Figs. 5, 6, and 7 show how a pamphlet is wrapped by my improved machine. Fig. 8 is a detail described below.

My improved wrapping-machine comprises a traveling carrier on which is mounted a plurality of rotatable mandrels. In the best form of my machine and as herein shown the carrier is intermittently operated so as to shift the mandrels successively into position to receive the pamphlets and wrappers which are fed to the mandrels while the carrier is at rest. This insures the accurate and positive feeding of the pamphlet and wrapper and permits of operating the machine at a high rate of speed. Also in the best form of my invention means is provided to rotate each mandrel after the pamphlet has been fed to it and while the carrier is at rest, so that after the pamphlet has been fed to the mandrel it is wrapped before the carrier is again shifted, thereby avoiding displacement of the pamphlet or wrapper and insuring perfect and quick wrapping.

Other features of my invention are hereinafter pointed out.

The machine herein shown is provided with four mandrels 1, 2, 3, and 4, each mounted at one end in a head or carrier 5, fixed to a shaft 6. Shaft 6, journaled at its ends in the frame of the machine, carries a wheel 7, which is periodically rotated ninety degrees by a wheel 8, fixed to the constantly-running main shaft 9. Each mandrel is hollow for a part of its length, and this hollow part is made with a slot 10, open at one end. Upon each mandrel is mounted a loose sleeve or collar 11, made with an annular groove 12, said collars being free to be moved lengthwise of the mandrels.

Fixed to each mandrel is a pinion 62, and these pinions are brought successively into coöperative relation with a mutilated gear 21, through which the mandrels are rotated to wind thereon the pamphlet and its wrapper—that is, each time one of the mandrels is brought into winding position gear 21 rotates the pinion 62 of that mandrel to the desired extent to effect the winding and wrapping. The teeth on the gear 21 are of such a number that each time it engages one of the pinions 62 it turns said pinion a predetermined number of complete revolutions, so that slot 10 of the mandrel will be left in the same position at the completion of the rotary movement imparted to the mandrel that it occupied before that movement. In order that slot 10 will be in proper position to receive the pamphlet each time the mandrel is brought into winding position, I provide a spring-pressed plunger 63, mounted in head 5, which normally bears upon a flattened section of the mandrel and holds the latter against rotary movement except when gear 21 engages pinion 62.

As each pinion 62 comes into coöperative relation with gear 21, as above described, the mandrel of that pinion is at the same time brought into position under a hopper 13, holding the pamphlets to be wrapped, and while each mandrel is in this position a pamphlet is fed from the hopper downwardly until the lower end of the pamphlet enters the slot 10 of the mandrel, as in Fig. 5. The mandrel is then rotated by the gear 21, thereby causing the pamphlet to be wound thereon, as in Figs. 6 and 7; but before the winding of the pamphlet is completed the end of a wrapper 14 is presented to the mandrel under the pamphlet, as shown in Fig. 6, after which said wrapper is wound onto the mandrel with the pamphlet. The wrapper, however, is of such length that when the winding operation is completed, as shown in Fig. 7, the outer end of the wrapper extends beyond the outer end of the pamphlet, so that it can be pasted to the preceding convolution of the wrapper.

The means for feeding the pamphlets into the slots of the mandrels herein comprises a slide 15, mounted upon the inside of the hopper and provided at its upper end with a shoulder 16 to engage the top edge of the end

pamphlet, the pamphlets in the hopper being fed up to the slide 15 by any suitable means, that herein shown consisting of a shifting weight 17.

Slide 15 is connected by a link 18 with one arm of a bell-crank lever 19, actuated by a cam-groove 20 in the side of gear 21. The gear 21 is fixed to a shaft 22, that is continuously rotated through spur-gears 23 and 24 from main shaft 9. During the downward feeding movement of slide 15 the lower end of the pamphlet is guided into the slot 10 of the mandrel, partly by the lower end of the slide and partly by a guide 25, depending from the bottom of hopper 13. This guide 25 is herein made in the form of a spring, because its lower end normally lies in the path of the mandrels, and therefore should be capable of yielding to allow the latter to pass it, while at the same time it is stiff enough to perform its guiding function.

In order to have the pamphlet wound closely upon the mandrel, as well as to provide for forcing the pasted end of the wrapper firmly into place, I provide alongside each mandrel a presser-roll 26, journaled at one end in one arm of a bell-crank 27 and at its other end in an arm 28, lever 27 and arm 28 both being fixed to a rock-shaft 29, journaled at one end in head or carrier 5 and at its other end in a head 5^a, fixed to shaft 6. This presser-roll is held yieldingly against its mandrel by a spring 30, mounted in head 5, so that as the winding operation proceeds the pamphlet passes between the mandrel and presser-roll, and as the winding is completed the pasted end of the wrapper is rolled down onto the preceding convolution of the wrapper, as in Fig. 7.

After a pamphlet has been wound upon the mandrel and wrapped further rotary movement of shaft 6 carries the mandrel away from hopper 13 and into coöperative relation with a doffer for removing the wrapped pamphlet from the mandrel. Also during this doffing operation the presser-roll 26 is moved and held out of contact with the pamphlet.

The doffing means herein shown comprises a slide 31, mounted on a pair of rods 32, fixed at their ends in the frame of the machine. This slide 31 carries upon its under side a cam-roll engaged by a cam 34 on a shaft 35. Shaft 35 carries a wheel 36, connected by a belt or chain 37 with a wheel 38 on main shaft 9.

Slide 31 is made with a blade 39, and normally this blade occupies a position in the path of the annular grooves 12, so that as each mandrel with a wrapped pamphlet thereon is brought into coöperative relation with slide 31 the blade 39 enters the groove 12 of the collar 11 of the mandrel and remains in engagement therewith during the interval of time between movements of shaft 6. During this time the cam 34 shifts slide 31 and collar 11 from one end of the mandrel to the other and back again, thereby causing the collar 11 to shove the wrapped pamphlet off the free end of the mandrel.

As shown in Fig. 1, the free arms of the bell-cranks 27 extend radially from head 5, and in the path of these arms is a pin 40, projecting from a bracket 41, fixed to rods 32. Pin 40 occupies such a position that as a mandrel comes into coöperative relation with slide 31 the projecting arm of its bell-crank 27 engages said pin, and thereby the presser-roll is shifted away from the pamphlet and held out of engagement therewith during the doffing operation.

The wrappers for the pamphlets may be supplied to the mandrels in any desirable shape and manner; but herein I have provided a web of wrapping-paper 42, supplied from a roll 43. The end of this web extends from roll 43 over a roll 44 and a table 45 to a pair of feed-rolls 46 and 47, by which the front end of the web is advanced to the mandrel at the proper time during the operation of the machine. After a predetermined length of the front end of web 42 has been fed forward that length is severed from the web by a pair of knives 48 and 49, and the rear end of the severed section is pasted by a paste-applying roll 50, which is raised against the under side of said section at the proper moment.

The feed-roll 46 is fixed to a shaft 51, journaled on the frame of the machine and carrying a pinion 52, constantly driven by a gear 53, fixed to shaft 22. The feed-roll 47 is on a shaft 54, journaled at its ends in a frame 55, pivoted at 56 to the frame of the machine. This frame 55 carries a pair of cam-rolls resting on a pair of cams 57, fixed to shaft 22. These cams 57 act to lift frame 55 and roll 47 to stop the feed of web 42 and to lower said frame and roll to effect the feed of said web. That is, normally roll 47 is held out of coöperative relation with roll 46; but when the web is to be advanced to the mandrel roll 47 is lowered onto the web, which is then propelled forward by roll 46.

The knife 49 is fixed to the frame of the machine, while the knife 48 is mounted on frame 55, so that when the latter is lifted to carry roll 47 away from roll 46 knife 48 is also lifted and in crossing the path of the web severs the latter.

The paste-applying roll 50 is journaled at each end in an arm 58, also pivoted at 56 and carrying a cam-roll arranged above a cam 59, fixed to shaft 22. Normally roll 50 rests upon a drum 60, fixed to shaft 9 and partly submerged in a paste-holding vessel 61, fixed to the frame of the machine. When the rear end of the severed section of the web, or, in other words, the wrapper, is to be pasted, the cams 59 act, through arms 58, to raise roll 50 into engagement with the wrapper.

As will be seen from the above description, my improved machine is simple in construction and capable of operating rapidly to form magazines, newspapers, pamphlets, and the like into compact rolls and to wrap them. The great advantage of my machine, however, is that the pamphlets are wrapped without creasing, folding, and like injury. Of course, however, a mandrel cylindrical in form is not essential to my invention, since if it be desired to wrap the pamphlets into more or less flattened bundles and creases and folds are not objectionable, which may sometimes be the case, then the shape of the mandrel can be modified to suit such cases. I do not limit myself, either, to the particular details of construction herein set forth, as these may be widely varied without departing from my invention.

What I claim is—

1. In combination, a traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier to which the wrappers and pamphlets are fed; means to automatically actuate the carrier step by step so as to shift the mandrels successively into receiving position; means to feed a wrapper to each mandrel after a pamphlet has been partly wound thereon and while the carrier is at rest, and means to rotate the mandrels while the wrapper is being fed to it.

2. In combination, a traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier to which the wrappers and pamphlets are fed; means to automatically actuate the carrier step by step so as to shift the mandrels successively into receiving position; means to feed a pamphlet to each mandrel while the carrier is at rest; means to feed a wrapper to each mandrel after the pamphlet has been partly wound thereon and while the carrier is at rest, and means to rotate each mandrel after the pamphlet has been fed to it and while the wrapper is being fed to it.

3. In combination, a traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier; means to intermittently actuate the carrier so as to shift the mandrels successively into receiving position; means to deliver a pamphlet and a wrapper to each mandrel when shifted into receiving position and while the carrier is at rest, and means to rotate each mandrel after the pamphlet has been fed to it and while the carrier is at rest.

4. A traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier; means to intermittently actuate the carrier; a pamphlet-holder to which the mandrels are successively presented and from which the pamphlets are delivered to the mandrels while the carrier is at rest, and means to rotate each mandrel when presented to the pamphlet-holder and while the carrier is at rest so as to wind the pamphlet thereon.

5. A traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier; means to intermittently actuate the carrier; means for delivering the pamphlets to the mandrels while the carrier is at rest, and means to rotate each mandrel when presented to the pamphlet-delivering means and while the carrier is at rest.

6. A traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier; means to intermittently actuate the carrier; means to automatically deliver the pamphlets to the mandrels while the carrier is at rest, and means to rotate each mandrel when presented to the pamphlet-delivering means and while the carrier is at rest.

7. A traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier; means to intermittently actuate the carrier; means to deliver the pamphlets and their wrappers to the mandrels while the carrier is at rest, and means to rotate each mandrel when presented to the pamphlet and wrapper delivering means and while the carrier is at rest.

8. A traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier; means to intermittently actuate the carrier; a pamphlet-holder from which the pamphlets are delivered to the mandrels while the carrier is at rest; means to doff the wrapped pamphlets from the mandrels after the latter have been shifted away from the holder and while the carrier is at rest, and means to rotate each mandrel when presented to the pamphlet-holder and while the carrier is at rest.

9. A traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier; means to intermittently actuate the carrier; means to deliver the pamphlets and their wrappers to the mandrels while the carrier is at rest; means to doff the wrapped pamphlets from the mandrels; and means to rotate each mandrel when presented to the pamphlet and wrapper delivering means and while the carrier is at rest.

10. In combination, a traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier; means to actuate the carrier; means to deliver the pamphlets and their wrappers to the mandrels, and means independent of the movement of the carrier for rotating the mandrels, substantially as described.

11. A traveling mandrel-carrier; a plurality of rotatable mandrels mounted on the carrier each adapted to engage the end of a pamphlet or the like; a plurality of movable pressers mounted on the carrier each bearing yieldingly upon one of the mandrels; a pamphlet-holder from which the pamphlets are delivered to the mandrels; means to doff the

wrapped pamphlets from the mandrels; means to intermittently actuate the carrier so as to present the mandrels successively first to the pamphlet-holder and then to the doffing means; means to rotate each mandrel when presented to the pamphlet-holder and while the carrier is at rest and means to move and hold each presser away from its respective mandrel while the wrapped pamphlet is being doffed.

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