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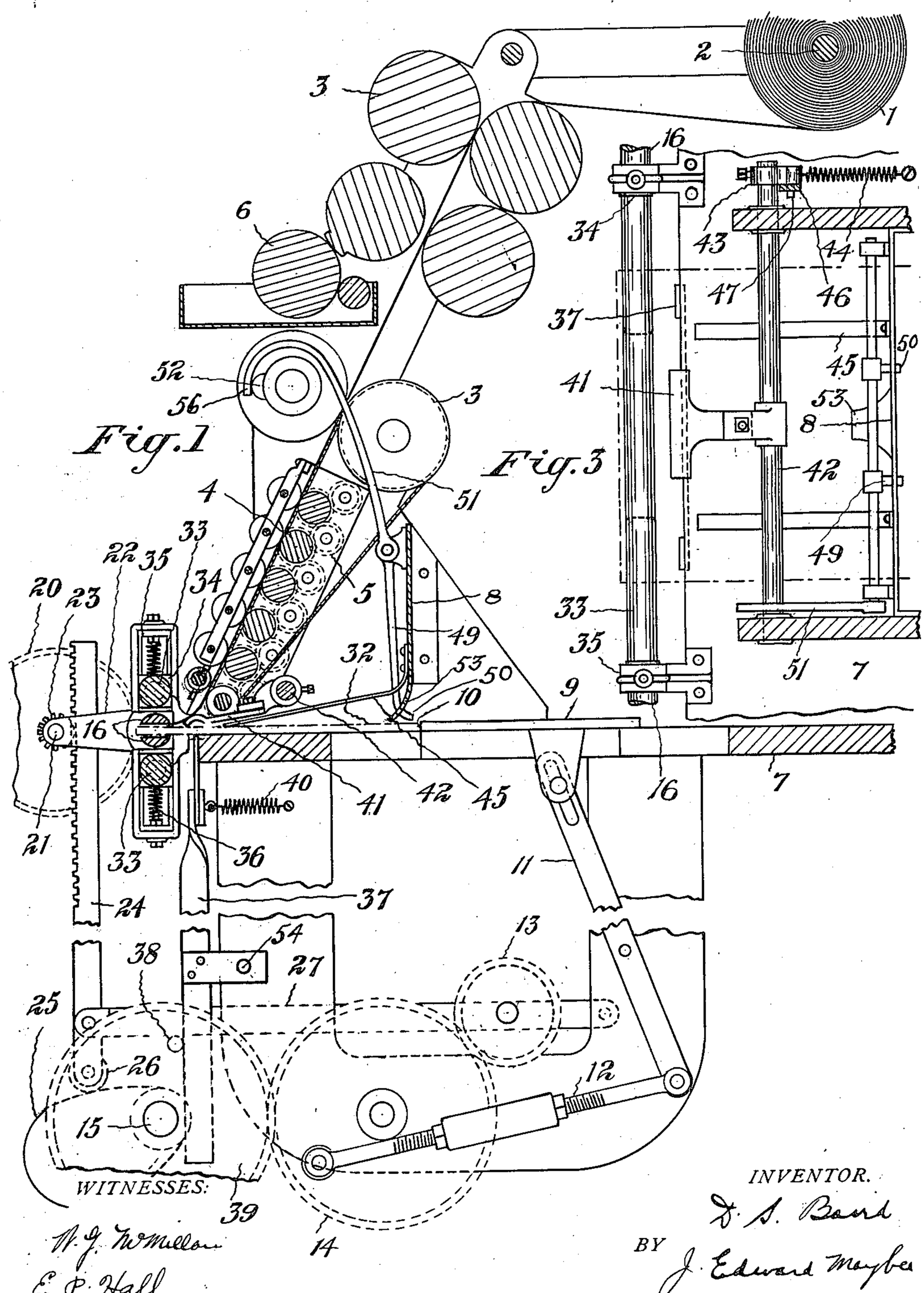
MAGAZINE WRAPPING MACHINE.

APPLICATION FILED AUG. 12, 1912. RENEWED SEPT. 1, 1915.

1,166,737.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 6

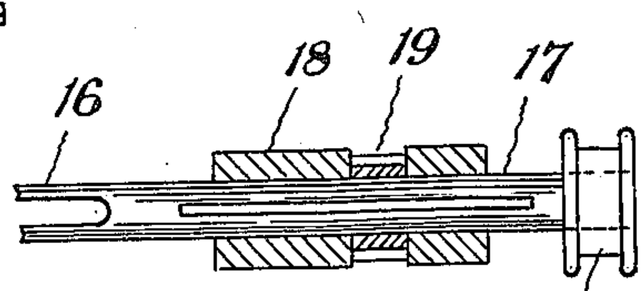

Fig. 5

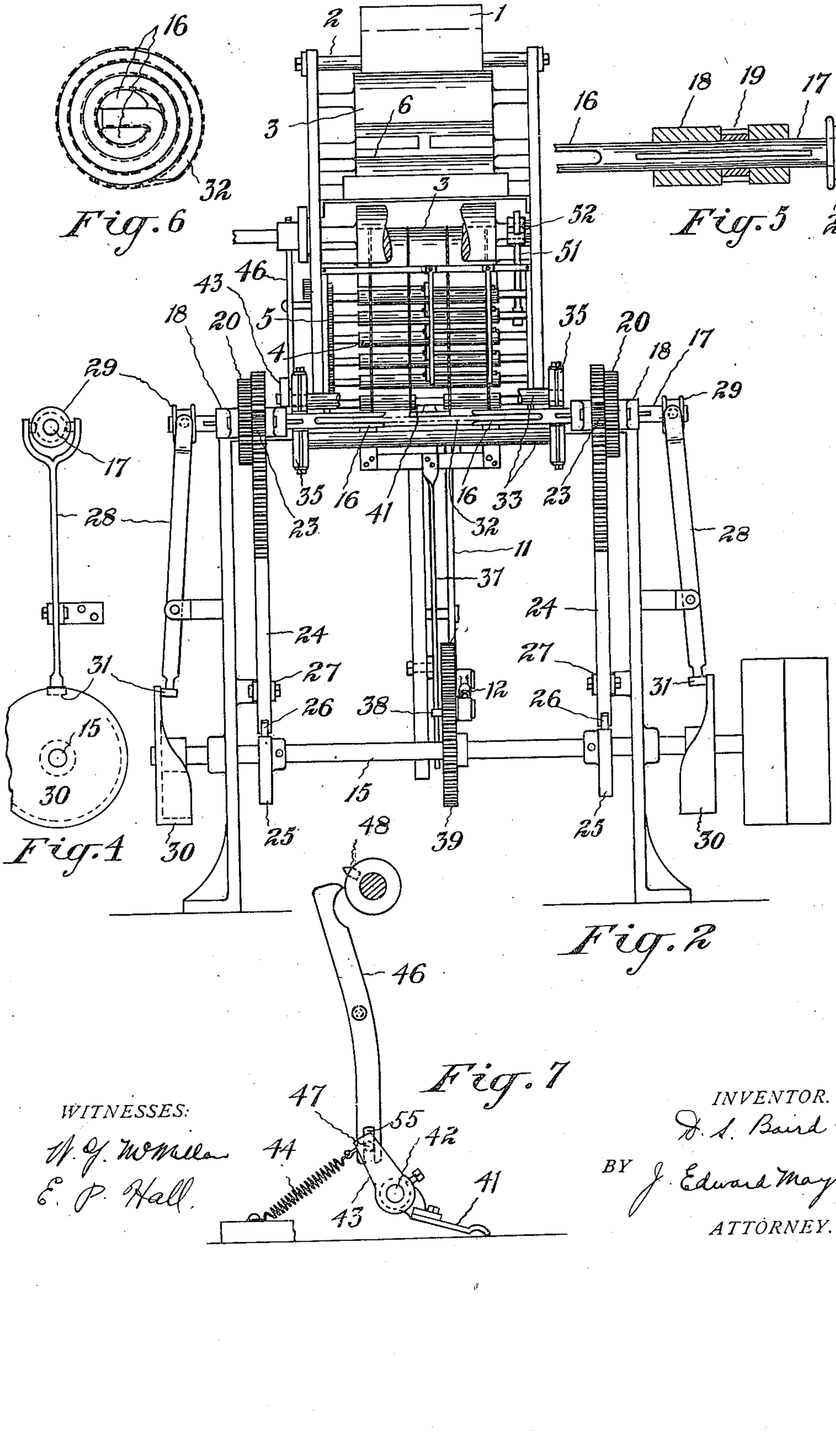

Fig. 4

Fig. 2

Fig. 7

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MAGAZINE-WRAPPING MACHINE.

1,166,737. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed August 12, 1912, Serial No. 714,687. Renewed September 1, 1915. Serial No. 48,579.

To all whom it may concern:

Be it known that I, DANIEL S. BAIRD, of the city of Toronto, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Magazine-Wrapping Machines, of which the following is a specification.

This invention relates to mechanism for wrapping printed matter and the like for distribution, and my object is to devise apparatus which will roll up with a magazine a sheet of paper drawn from a web and seal the same.

I attain my object by means of apparatus which will grasp the magazine, and in some cases the wrapping paper, near the forward sides, and by a rotary movement roll up the same together until the magazine is completely wrapped, the wrapper sheet torn from the web and a previously gummed edge pasted down. Means are provided for firmly, but yieldingly, pressing the wrapper and its contents together as rolling proceeds, for straightening out any buckle intermediate the ends of the magazine when rolling commences and for kicking out the wrapped magazine substantially as hereinafter more particularly described and illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of a portion of a machine constructed in accordance with my invention. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view showing the magazine grasping forks and the anti-buckle device. Fig. 4 is a detail, showing the means for longitudinally moving the forks. Fig. 5 is a sectional detail showing one of the forks and its bearing. Fig. 6 is an end view of a wrapped magazine. Fig. 7 is a side elevation of the anti-buckling device and its operating mechanism.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

In this machine I employ certain feeding, cutting and pasting devices which are well known in the art and need not be particularly described. Suffice it to say that a web of wrapping paper 1 is supported on the roller 2 and is fed forward by the feeding rollers 3 operated in any well known manner.

From the lower feed rollers 3 the paper passes between the guiding and feeding rollers 4, as shown in Fig. 1. The lower feed rollers 4 are geared together, as shown at the left hand side of Fig. 2, by means of the spur gearing 5, so that they may be simultaneously operated in any well-known manner.

Intermediate the feed rollers 3 is placed the pasting mechanism 6 of any well known construction. Paper cutting devices for partially severing the paper will be employed, intermediate the roller 1 and the pasting mechanism, but no claim is made for such features, as the present invention lies particularly in the means for actually performing the wrapping operations.

The magazines themselves are placed in a pile on the table 7, behind the vertical plate 8. A slide 9 is adapted to play backward and forward beneath the bottom of the pile of magazines, to engage the magazines one by one with its edge 10. The result of its reciprocating movement is that the magazines are fed forward one at a time to the front of the table 7. This plate is actuated by means of the rock arm 11 which is fulcrumed intermediate its ends. The lower end of this rock arm is actuated by means of the pitman 12 connected with a wrist pin on the gear wheel 14 suitably journaled on the frame and actuated by the gear wheel 39 on the shaft 15.

The wrapping mechanism proper has as its basis the forks 16 formed on the spindles 17 rotatably and longitudinally slidable in the bearings 18.

The forks are rotated through the medium of the pinions 19 engaging the spindles 17 through the medium of suitable keys and keyways. The pinions mesh with the gear wheels 20 fast on the spindle 21 journaled in the brackets 22. These spindles also carry the pinions 23 which mesh with the racks 24. These racks are driven by means of the cams 25 fast on the shaft 15, the lower ends of the racks being preferably provided with the anti-friction rollers 26. The racks are held in place at their lower ends by the links 27, said links being pivotally connected at their forward ends with the racks and at their rearward ends with the frame of the

machine. The upper ends of the racks slide in the brackets 22.

By the constructions just described the forks 16 are given a rotary movement in one direction, the movement being then reversed and the forks returned to their original position. The forks are also, as already described, capable of endwise movement. This movement is imparted to them at the proper time by the following mechanism: At each side of the machine the rock arm 28 is fulcrumed intermediate its ends (see Figs. 4 and 2). The upper end of this rock arm is shaped like an ordinary clutch shifter to engage a grooved hub 29 on the end of one of the spindles 17. The lower end of each rock arm engages one of the cams 30 fast on the shaft 15 being provided with the anti-friction roller 31 for this purpose.

On reference particularly to Fig. 1, it will be seen that when a magazine 32 is in the position shown in dotted lines that the front edge of the wrapping paper lies on its upper surface adjacent the forward side. The forks 16 have engaged between them the magazine at its forward side, also in some cases the edge of the wrapping paper. At this moment the forks are rotated rolling up together the magazine and the wrapping paper until a complete cylindrical roll is formed.

The web of wrapping paper is partly cut or perforated at such intervals that rather more than a complete turn of the wrapping paper is taken around the rolled magazine after the latter has been completely rolled up. The pasted or gummed edge of the wrapping paper thus contacts with the wrapper, and the wrapper is thus secured about the roll.

To insure a tight roll and to insure also the proper pressing of the pasted edge in contact with the roll I provide the pressure bars 33 preferably formed as rolls journaled in the blocks 34 movable to and from the forks 16 in the guides 35. These pressure bars are yieldingly pressed toward the forks by means of the springs 36 engaging the blocks 34 and the guides 35. The pressure bars thus maintain a firm pressure on the roller as the wrapping proceeds while they readily yield to accommodate themselves to the increasing diameter of the roll as wrapping proceeds. One important result follows from this increasing diameter of the roll. The wrapping paper is drawn forward by the rotating roll at a greater speed than normal. Consequently if it has been impressed with lines of weakness either before the web is placed in the machine or as the paper is fed from the roll the part being wrapped about the roll is torn away from the rest of the web. This tearing away occurs some little distance back from the forks, so that at the time the rolling is complete the now forward edge of the web is just approaching the wrapping position shown in Fig. 1. Of course, the rapid drawing away of the end of the web being wrapped round the magazine may be assisted or entirely caused by rotating the forks 16 with a surface speed somewhat higher than that of the paper feed.

The completely wrapped magazine is ejected by means of the following mechanism: A kicker lever 37 is suitably fulcrumed at 54 on the frame of the machine with its upper end just behind the position occupied by a completely rolled and wrapped magazine. At the proper instant this kicker lever is actuated to contact with the rear side of the wrapped magazine and throw the same forward out of the way of the succeeding magazine. This movement is accomplished by means of the pin 38 secured to the gear wheel 39 on the shaft 15, which gear wheel forms part of the train actuating the magazine feed. A coil spring 40 is suitably arranged to retract the kicker as soon as its function has been performed. It should be mentioned that just before the kicker is actuated the forks 16 are being withdrawn from the wrapped magazine leaving the latter free to be ejected.

The forks 16 being very short, and two being employed operating from each end, the movement of engagement with and disengagement from the magazine is very much more rapidly performed than if a single fork were employed which would necessarily have to extend substantially from end to end of the forward side of the magazine necessitating a prolonged travel.

The use of two short forks, however, introduces a disadvantage which special mechanism is required to overcome. That is, the magazine has a tendency instead of rolling smoothly to buckle at the center between the forks, preventing the formation of a neat and well wrapped roll. To correct this tendency I provide an anti-buckling device, comprising a finger 41, adapted to engage the upper surface of the magazine just back of the surface of an imaginary cylinder containing the forks. This finger is secured to the spindle 42 journaled on the frame of the machine. The arm 43 is secured to the one end of the spindle to which is connected one end of the coil spring 44, the other end of which is connected to a suitable stationary part and tends to lift the finger 41. At the proper moment the finger is depressed to straighten out a buckle by means of the rock arm 46 which by means of the slot 55 engages with a pin 47 the arm 43. The rock arm is actuated momentarily by means of the cam 48 on the shaft of one of the rollers 3. Just back of this finger the magazines pass under

the springs 45 which keep it down in position to pass forward for engagement between the forks.

I find that owing to defects and irregularities in the binding of the magazines that a tendency exists for two to be fed forward at a time instead of one only. To prevent any such double feeding I provide the following restraining mechanism. One or more fingers 49 with bent ends 50 are secured to a shaft journaled on the plate 8. A rock arm 51 is secured to the shaft and has its upper end bent over the shaft of one of the rollers 3 so as to be engaged by the cam 52 thereon, which bent end is moved forward at the proper time by the cam to give a rearward kick to the lower end of the said rock arm. The result is that as each bottom magazine is fed forward the one next above is given a backward kick which effectually prevents it following beneath the bent spring finger 53. This is intended to keep back all magazines except the bottom one but as it must be more or less yielding to suit inequalities in the binding of the magazines it is not sufficient in itself without the addition of the positively operated fingers 49. The next magazine above as it descends pushes the fingers 49 forward to their normal position and consequently the rock arm 51 is brought back in position for its end 56 to be again acted on by the cam 52.

From the above description it will be seen that I have devised a machine which will form a neat tight roll of any magazine, or the like, and which is particularly adapted to magazines of some weight and thickness which cannot be folded.

What I claim as my invention is:—

1. In wrapping apparatus the combination of magazine feeding means; wrapper feeding means; rotatable means for grasping the magazine by the ends near one edge; means for imparting a continuous rotary movement to the grasping means till the magazine and wrapper are rolled up together; means for withdrawing the grasping means from engagement when the rolling movement is completed; and means adapted to engage the magazine between the ends adjacent to the aforesaid side to take out any buckle therein and start the curvature at the beginning of the rolling movement.

2. In wrapping apparatus the combination of magazine feeding means; wrapper feeding means; rotatable means for grasping the magazine by the ends near one edge; means for imparting a continuous rotary movement to the grasping means till the magazine and wrapper are rolled up together; means for withdrawing the grasping means from engagement when the rolling movement is completed; a pressure bar parallel to the axis of the rolled magazine; means for yieldingly pressing the said bar against the magazine and wrapper during the rolling operation; and means adapted to engage the magazine between the ends adjacent to the aforesaid side to take out any buckle therein and start the curvature at the beginning of the rolling movement.

3. In wrapping apparatus the combination of magazine feeding means; wrapper feeding means; rotatable means for grasping the magazine by the ends near one edge; means for imparting a continuous rotary movement to the grasping means till the magazine and wrapper are rolled up together; means for withdrawing the grasping means from engagement when the rolling movement is completed; a pressure bar parallel to the axis of the rolled magazine; means for yieldingly pressing the said bar against the magazine and wrapper during the rolling operation; means adapted to engage the magazine between the ends adjacent to the aforesaid side to flatten out any buckle therein and start the curvature at the beginning of the rolling movement; and means for imparting an ejecting kick to the wrapped magazine.

4. In wrapping apparatus the combination of magazine feeding means; wrapper feeding means; rotatable means for grasping the magazine by the ends near one edge; means for imparting a continuous rotary movement to the grasping means till the magazine and wrapper are rolled up together; means for withdrawing the grasping means from engagement when the rolling movement is completed, a pivoted finger adapted to engage the magazine between the ends adjacent the aforesaid edge; and means for depressing the finger at the beginning of the rolling operation to flatten out any buckle in the magazine and start the curvature.

5. In wrapping apparatus the combination of magazine feeding means; wrapper feeding means; rotatable means for grasping the magazine by the ends near one edge; means for imparting a continuous rotary movement to the grasping means till the magazine and wrapper are rolled up together; means for withdrawing the grasping means from engagement when the rolling movement is completed; a pressure bar parallel to the axis of the rolled magazine; means for yieldingly pressing the said bar against the magazine and wrapper during the rolling operation; a pivoted finger adapted to engage the magazine between the ends adjacent the aforesaid edge; and means for depressing the finger at the beginning of the rolling operation to flatten out any buckle in the magazine and start the curvature.

6. In wrapping apparatus the combination of magazine feeding means; wrapper feeding means; rotatable means for grasping the magazine by the ends near one edge; means

for imparting a continuous rotary movement to the grasping means till the magazine and wrapper are rolled up together; means for withdrawing the grasping means from engagement when the rolling movement is completed, a pivoted finger adapted to engage the magazine between the ends adjacent the aforesaid edge; and means for depressing the finger at the beginning of the rolling operation to flatten out any buckle in the magazine and start the curvature, and a spring tending to raise the finger.

Toronto, this 2nd day of August, 1912.

DANIEL S. BAIRD.

Signed in the presence of—
A. CAMPBELL,
E. P. HALL.