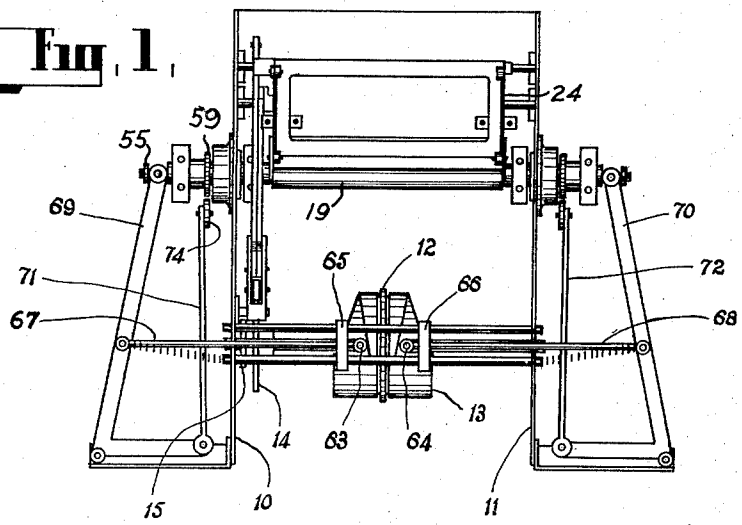
Nov. 19, 1957 G. A. KERR 2,813,386

MACHINE FOR ROLLING AND WRAPPING NEWSPAPERS, PERIODICALS AND THE LIKE

Filed Nov. 24, 1954 2 Sheets-Sheet 1

Fig. 1.



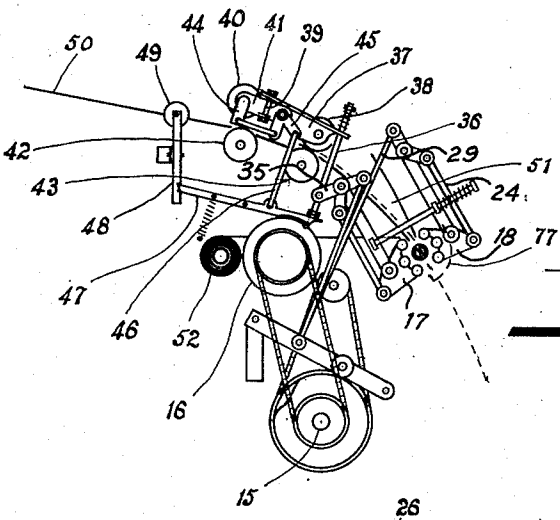


Fig. 2.

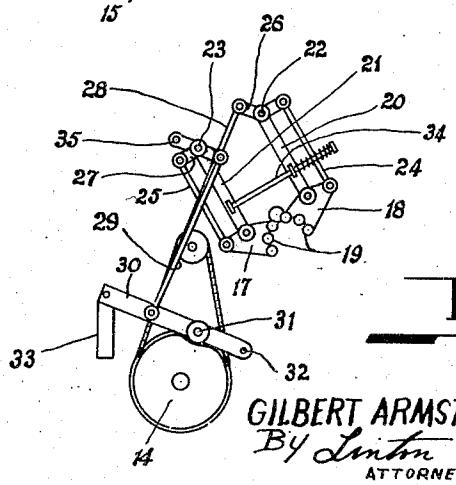


Fig. 3.

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MACHINE FOR ROLLING AND WRAPPING NEWSPAPERS, PERIODICALS AND THE LIKE

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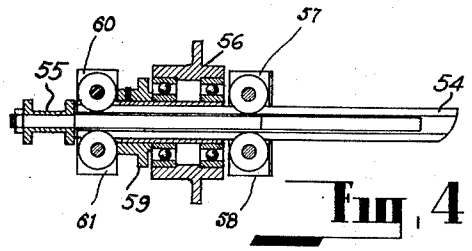


Fig. 4

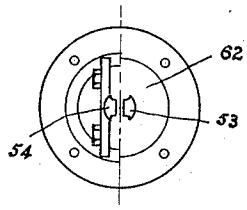


Fig. 5

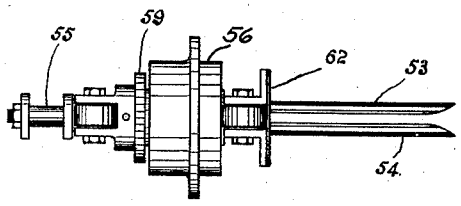


Fig. 6

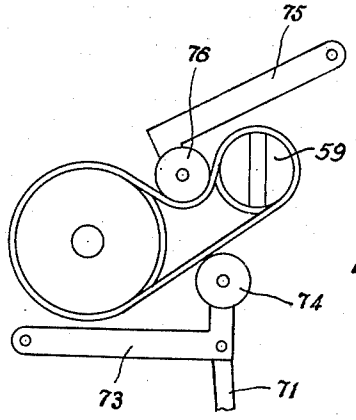


Fig. 7

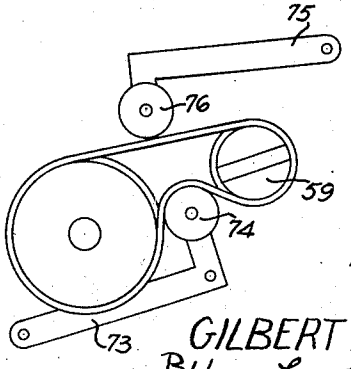


Fig. 8

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MACHINE FOR ROLLING AND WRAPPING NEWSPAPERS, PERIODICALS AND THE LIKE

Gilbert Armstrong Kerr, Scarborough, Western Australia, Australia

Application November 24, 1954, Serial No. 471,054

8 Claims. (Cl. 53—119)

This invention relates to a machine for rolling and wrapping newspapers, periodicals and the like.

In using this machine, the papers are fed one by one and they are automatically rolled and, if wrapping paper is fed in, wrapped with this and finally discharged.

A salient feature of the invention resides in the use of sliding pins or rods which move in from each side, and rotated, roll the paper against a plurality of surrounding and resiliently mounted rollers in two sets, the wrapping paper, if fed in, being simultaneously rolled so that adhesion of the moistened end completes the wrapping.

The invention will more readily be understood by reference to the accompanying drawings illustrating it to some extent diagrammatically. As shown in these drawings:

Figure 1 is an elevation of the machine from the back;

Fig. 2 is a sectional side elevation of most of the operating parts of the machine;

Fig. 3 is a similar view except that for the sake of clearness a number of the operating parts have been left out. This view is introduced to show the position of the rollers when the rolled and wrapped paper is discharged;

Fig. 4 is a sectional elevation through a pair of the driving pins or rollers and the means for mounting and driving the same;

Fig. 5 is a half sectional end elevation thereof;

Fig. 6 is a plan thereof;

Fig. 7 illustrates the lost motion arrangement in the one position, and

Fig. 8 is a view of the lost motion arrangement in the other position.

As shown in the drawings, the machine has a frame with vertical side members 10 and 11. There is a sprocket 12 driven from a convenient source of power, and on each side of this sprocket in the center there is a double-sided cam 13. Mounted on the same shaft is another cam 14. There is also a sprocket 15 on the same shaft which drives a one-revolution clutch 16 which will be associated with the supply and feed of the adhesive paper the mechanism of which can be of any desired form and is not directly the subject of any of the claims in this specification.

On each side of the machine are roller-supporting brackets 17 and 18. These act as supports and provide the bearings for two sets of inwardly facing circumferentially spaced rollers 19. Each bracket 18 is pivoted to one end of a supporting link 20 whereas each bracket 17 is similarly pivoted to the end of another supporting link 21. The far ends of these links are provided at 22 and 23, but they are not capable of any up or down movement.

There are control links 24 and 25, the ends of which are also pivoted to the brackets 17 and 18, and these control links are pivoted to the ends of cranked levers 26 and 27 that in turn are operated by drag links 28 and 29. These drag links in turn are pivoted to a cam-controlled lever 30 having a bearing roller 31 pivoted at

32 and at the end having a dead weight 33 to give stability. Operating on the supporting links 20 and 21 is a spring-loaded bolt 34 which tends resiliently to bring these links together at the bottom and so of course bring the two sets of rollers 19 near to each other.

The crank lever 27 has an extension 35 which is pivoted to a feed control rod 36. This in turn has spring-loading and acts on a housing 37 supporting a holding roller 38. The housing 37 of the holding roller 38 engages against the spring loading of a control rod 39 of a feed roller 40 supported in a housing 41.

There are continuously driven rollers 42 and 43 which are in line with the feed roller 40 and holding roller 38 respectively and actually drive these rollers when they are brought into juxtaposition therewith with the paper or the like between them. Pivoted on each side of the housing of the feed roller 40 is a pawl 44 below which there are stops that prevent the feed roller coming down when the pawls are in the position shown in Fig. 2. These pawls however are each connected by a link to a crank lever 45 and this in turn is operated by a link 46 pivoted intermediate of the ends of a trip lever 47. This trip lever is spring-loaded and in the position shown in Fig. 2, it is held by an interlocking lever 48. This interlocking lever is pivoted and at its upper end it is connected to an interlocking disc 49 or the like.

The table on which the papers are placed and fed is indicated at 50, this table being of course slotted so as to expose the upper part of the continuously rotating rollers 42 and 43, and the table extends to a chute 51 into which the papers pass.

There will be a roll of gummed wrapping paper 52 which feeds into the bottom of the chute by mechanism for cutting it off in appropriate lengths and moistening the gum at one end, such mechanism being of any desired form but not being the subject of any special claim in this specification. It may, however, conveniently be controlled by the one-revolution clutch 16 on the latter being released from the trip lever 47.

On each side between the two sets of rollers 19 operate rotating pins or rods 53 and 54. These each somewhat resemble the prongs of the conventional clothes pegs. They extend to be one unit to a pin 55 carrying double-collar thrust plates. The cross section of a pair of pins is somewhat similar to a dumbbell or magneto armature.

Each unit passes through a housing 56 connected to the side frame and having a double set of ball bearings therein. A sleeve passing through the housing and the ball bearings is connected on one side to brackets 57 and 58 carrying double-row rigid bearings that engage the pin units. On the other side the sleeve is connected to a sprocket or chain pinion 59 and to this in turn are connected brackets 60 and 61 also having double-row rigid bearings. The pin units can therefore rotate together with the double-row rigid bearings supported by the brackets 57, 58, 60 and 61, but they can also move transversely in relation thereto. Where the pins pass beyond the rigid bearings on the inner side they will preferably pass through a facing plate 62 which is constructed closely to conform to the outline of the pins so as to prevent paper from being drawn in and entangled with the bearings.

Associated with the double-sided cam 13 there is on each side a thrust roller 63 or 64. These are connected to sliding blocks 65 and 66 in turn connected to thrust rods 67 and 68. These thrust rods are pivoted to links 69 and 70 which are spring-loaded to hold them against the action of the thrust rods 67 and 68. Such links at the end have means for connection to the pins 55 carrying the double thrust collars at the ends of the pin units.

The lower part of the links 69 and 70 are cranked and extend to an end where they are respectively connected

to lost motion control arms 71 and 72. These lost motion control arms are pivoted to the ends of a lever 73 that carries a roller 74 that is adapted to engage against the chain driving the sprocket 59 of the pin units. There is another lever 75 above the chain supporting another roller 76, spring-loaded so as to engage against the upper part of the said chain. The effect is that through the up and down movement of the lost motion control arms 71 and 72, the slack in the chain driving the pin units is taken up at the top as shown in Fig. 7, or at the bottom as shown in Fig. 8, the position shown in Fig. 7 being that in which the pins are in position, and that shown in Fig. 8 being the position in which the pins have been withdrawn.

When the apparatus is to be used for rolling bound periodicals or the like, it will be advisable to have a tray 77 supported at the bottom of the brackets supporting one set of rollers so that the end of the periodical is supported therein whilst being rolled.

The machine operates as follows.

A newspaper or periodical is placed on the table 50 so that at the side it passes against the interlocking disc 49. This moves the interlocking lever 48 and consequently unlocks the trip lever 47. The paper is moved until the front part of it is beneath the feed roller 40. When the roller 31 of the cam lever 30 moves into the low part of the cam, as shown in Fig. 3, the drag link 29 is pulled down. This operates the crank lever 27 and its extension 35 which is pivoted to the feed control rod 36, which is thereby moved up. This upward movement is communicated to the housing 37 of the holding roller 38 and to the control rod 39 of the feed roller 40 which is consequently moved down and engages the paper which thereby comes under the driving impetus of the rollers 40 and 42 and is moved on.

When the front end of the paper has reached a position between the roller 43 and the holding roller 38, the cam control lever 30 is moved so that its roller is riding on the high part of the cam 14. Consequently the drag link 29 is moved in the opposite direction and this results in the feed control rod 36 causing the holding roller 38 to be brought down and to engage the paper whilst the feed roller 40 is simultaneously lifted and released therefrom. The paper then moves downwardly into the chute 51 between the two sets of rollers 19 supported by the brackets 17 and 18 and when it has reached the position when its center is about in line with the pins, the top end is still held between the rollers 38 and 43. At this position the pins 53 and 54, which are simultaneously and continuously rotating, come in, one pair from each side. This inner movement of the pins is modified by the lost motion mechanism previously referred to. The effect of this is that there is a short pause in the rotation of these pins so that the space between them is correctly orientated in relation to the paper on each side of which the pins are to pass. The pins thereupon commence to roll the paper up and the spring-loading of the two sets of rollers hold them tightly but resiliently against the paper being rolled.

When the paper has been rolled about one turn, the feed mechanism operating the supply of wrapping paper from the roller 52 will preferably be started so that it is rolled up with and around the paper and, if the extreme edge is moistened, will firmly hold the rolled paper together. Whilst the paper has been rolled (in all, about five turns), the pins have been slowly withdrawn until they are right clear of the wrapped paper, which is then only held by the rollers supported by the brackets 17 and 18 on each side. By this time, however, the roller 31 of the cam-controlled lever 30 has moved into the recessed portion of the cam, with the result that the drag links 28 and 29 are pulled downwardly. This action is communicated to the cranked levers 26 and 27. This in turn pulls up the control links 24 and 25, which opens the two sets of rollers against the spring-loading to the

position shown in Fig. 3 and so discharges the rolled and/or wrapped paper. By this time, another paper is being fed by the roller 40 so that the operation can be repeated.

When periodicals are to be rolled, the placing of a tray 77 at the bottom of the bracket 18 will support the bottom end of the periodical whilst it is being rolled as it will not normally be supported by the holding roller 38.

In the claims when reference is made to "newspapers" or "papers," this term is to be deemed to include periodicals and the like.

I claim:

1. A machine for rolling newspapers and the like comprising two sets of resiliently mounted circumferentially spaced rollers, means for feeding a paper in a substantially flat condition to a position between said two sets of rollers, said rollers being parallel to the face of the paper, a pair of co-axial and axially spaced pronged members arranged to move towards and away from each other parallel to and between said two sets of rollers, means for rotating said pronged members, cam operated means for moving said pronged members quickly towards each other to embrace the side edges of the paper towards the center thereof with said prongs disposed on both faces of the paper and withdrawing said pronged members slowly as the rolling action is completed, cam operated link means for moving said two sets of rollers apart so that the rolled paper discharges under gravity and a lost motion mechanism incorporated in said means for rotating said pronged members for stopping the rotation of such members while they are being moved towards each other to embrace the side edges of the paper.

2. A machine for rolling newspapers and the like comprising two sets of resiliently mounted circumferentially spaced rollers, means for feeding a paper in a substantially flat condition to a position between said two sets of rollers, brackets at each end of each set of rollers supporting said rollers parallel to the face of the paper, a pair of co-axial and axially spaced pronged members arranged to move towards and away from each other parallel to and between said two sets of rollers, means for rotating said pronged members, cam operated means for moving said pronged members quickly towards each other to embrace the side edges of the paper towards the center thereof with said prongs disposed on both faces of the paper and withdrawing said pronged members slowly as the rolling action is completed, supporting links connected at one end to each of said brackets, control links conected at one end to each of said brackets, cranked levers connected to the other end of said links, a cam controlled lever, drag links connecting said cranked levers to said cam controlled lever so that operation thereof causes said sets of rollers to move apart so that the rolled paper discharges under gravity, a spring loaded bolt connecting said supporting links to hold said two sets of rollers together, and a lost motion mechanism incorporated in said means for rotating said pronged members for stopping the rotation of such members while they are being moved towards each other to embrace the side edges of the paper.

3. A machine for rolling newspapers and the like comprising two sets of resiliently mounted circumferentially spaced rollers, means for feeding a paper in a substantially flat condition to a position between said two sets of spaced rollers, said rollers being parallel to the face of the paper, a pair of coaxial and axially spaced pronged members arranged to move towards and away from each other parallel to and between said two sets of rollers, means for rotating said pronged members, a plurality of thrust rods, a cam operating one of said thrust rods on each side, a spring loaded link connected to each thrust rod, a double thrust collar mounted on the end of said pronged member being engaged by said link, the cam operating said thrust rod being arranged so that said pronged members are drawn apart slowly as the rolling action is completed and said pronged members are moved quickly towards each other

to embrace the side edges of the paper, cam operated link means for moving said two sets of rollers apart so that the rolled paper discharges under gravity and a lost motion mechanism incorporated in said means for rotating said pronged members for stopping momentarily the rotation of such members while they are being moved towards each other to embrace the side edges of the paper.

4. A machine for rolling newspapers and the like as claimed in claim 3, wherein a loose chain is provided for driving said pronged members, a roller alternately moves the slack of said chain from the top to the bottom and an arm carrying said roller is connected to said link engaging said double thrust collar on the end of said pronged members.

5. A machine for rolling newspapers and the like comprising the combination of a frame, a driven shaft supported by said frame, a cam mounted on said shaft, a cam lever engaging said cam for being operated thereby, two brackets supported from both sides of said frame, inwardly facing rollers supported by said brackets in circumferentially spaced positions, a supporting link pivoted to each bracket, spring-loading between said supporting links tending to hold said brackets together, a control link pivoted to each bracket, levers connected to the other end of said control links, and drag links pivotally mounted on said levers, the other end of said drag links being pivotally connected to said cam-operated lever so that movement of said cam causes movement of said drag links and thereby through said control links opens out said rollers supported by said brackets against spring action or allows them to come together with such action, a pair of co-axial and axially spaced pronged members arranged to move towards and away from each other parallel to and between said inwardly facing rollers, means for feeding a paper in a substantially flat condition to a position between said inwardly facing rollers, means for rotating said pronged members, cam operated means for moving said pronged members quickly towards each other to embrace the side edges of the paper towards the center thereof with said prongs disposed on both faces of the paper and withdrawing said pronged members slowly as the rolling action is completed and a lost motion mechanism incorporated in said means for rotating said pronged members for stopping momentarily the rotation of such members while they are being moved towards each other to embrace the side edges of the paper.

6. A machine for rolling newspapers and the like comprising the combination of a frame, a driven shaft supported by said frame, a cam mounted on said shaft, a cam lever engaging said cam for being operated thereby, two brackets supported from both sides of said frame, inwardly facing rollers supported by said brackets in circumferentially spaced positions, a supporting link pivoted to each

bracket, spring-loading between the supporting links tending to hold said brackets together, a control link pivoted to each bracket, levers connected to the other end of said control links, and drag links pivotally connected to said levers, the other end of said drag links being pivotally connected to said cam-operated lever so that movement of said cam causes movement of said drag links and thereby through said control links opens out said rollers supported by said brackets against spring action or allows them to come together with such action, a pair of co-axial and axially spaced pronged members arranged to move towards and away from each other parallel to and between said inwardly facing rollers, means for feeding a paper in a substantially flat condition to a position between said inwardly facing rollers, means for rotating said pronged members, cam operated means for moving said pronged members quickly towards each other to embrace the side edges of the paper towards the center thereof with said prongs disposed on both faces of the paper and withdrawing said pronged members slowly as the rolling action is completed and a lost motion mechanism incorporated in said means for rotating said pronged members for stopping momentarily the rotation of such members while they are being moved towards each other to embrace the side edges of the paper including a drag link for operating an extension of one of said levers, a feed control rod pivoted to such extension, a housing, a holding roller supported by said housing operated by the spring loading of said feed control rod, a feed roller, a control rod operating said feed roller against a spring-loading from said housing of said holding roller.

7. A machine for rolling newspapers and the like as claimed in claim 6 including an interlocking disc, an interlocking lever connected thereto, a trip lever released by said interlocking lever, a cranked lever, a link one end of which is pivoted to said trip lever and the other end of which is pivoted to said cranked lever, and pawls linked to said cranked lever controlling the position of said feed roller.

8. A machine for rolling newspapers and the like as claimed in claim 6 including continuously operated rollers placed below said feed roller and said holding roller, a feed table slotted in line with the top part of said continuously operating rollers, and a roll of gummed wrapping paper placed so that paper can be fed in where the newspaper is being rolled.

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