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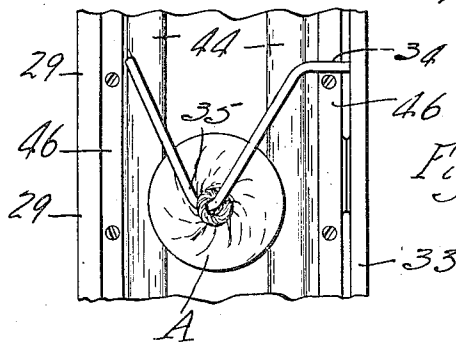
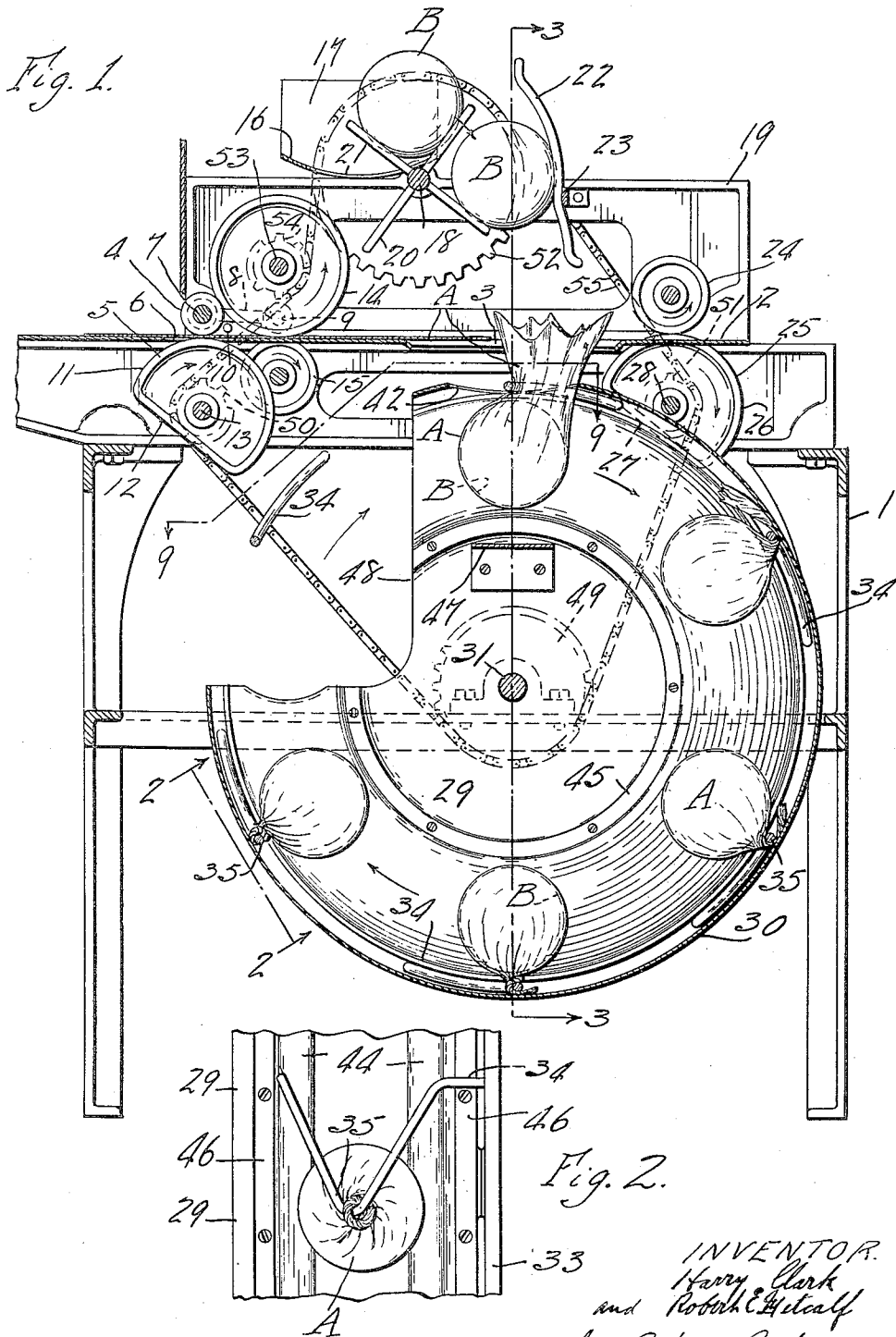
H. CLARK ET AL

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METHOD AND APPARATUS FOR WRAPPING ARTICLES

Filed Oct. 27, 1928

4 Sheets-Sheet 1



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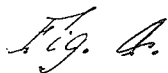
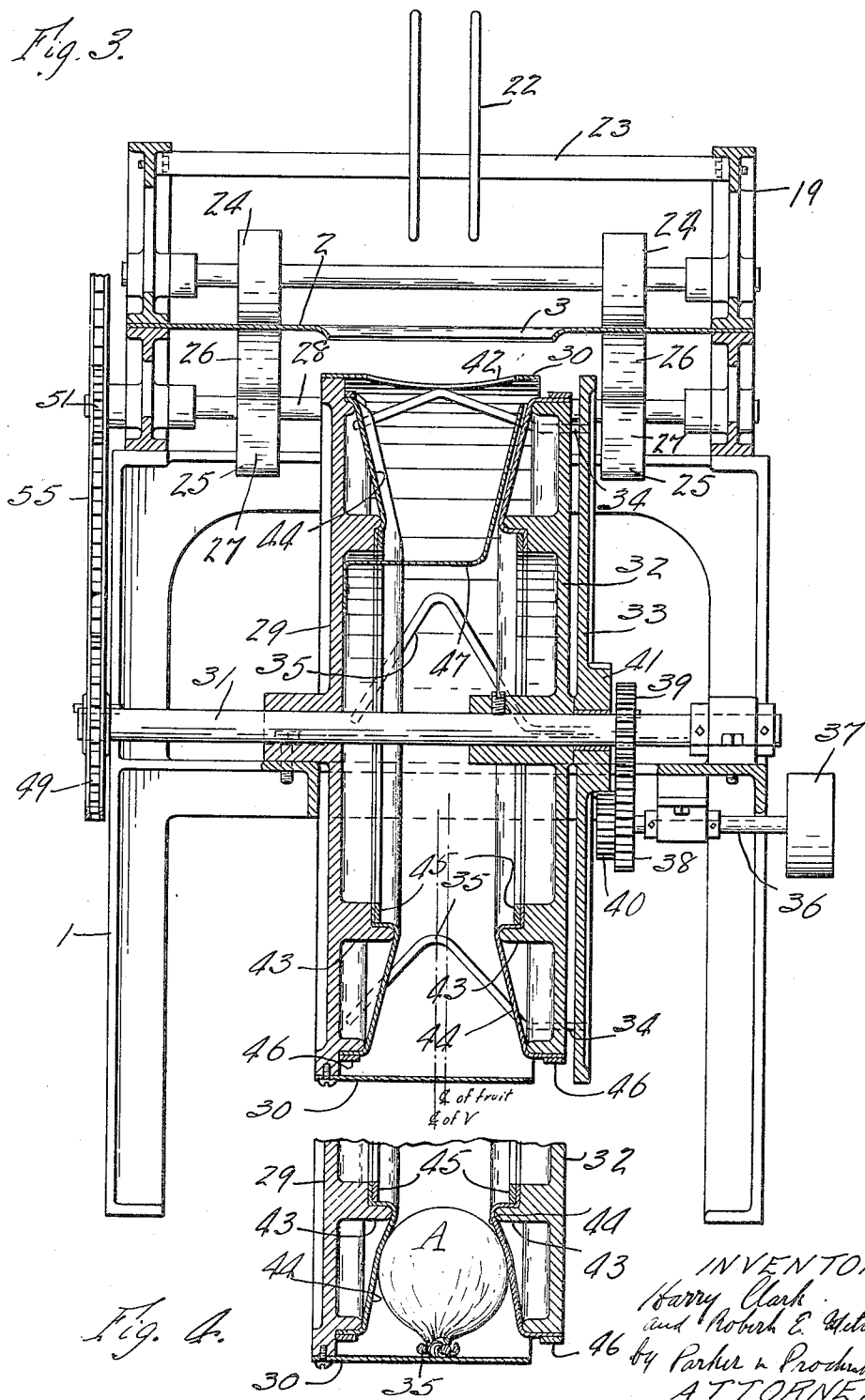
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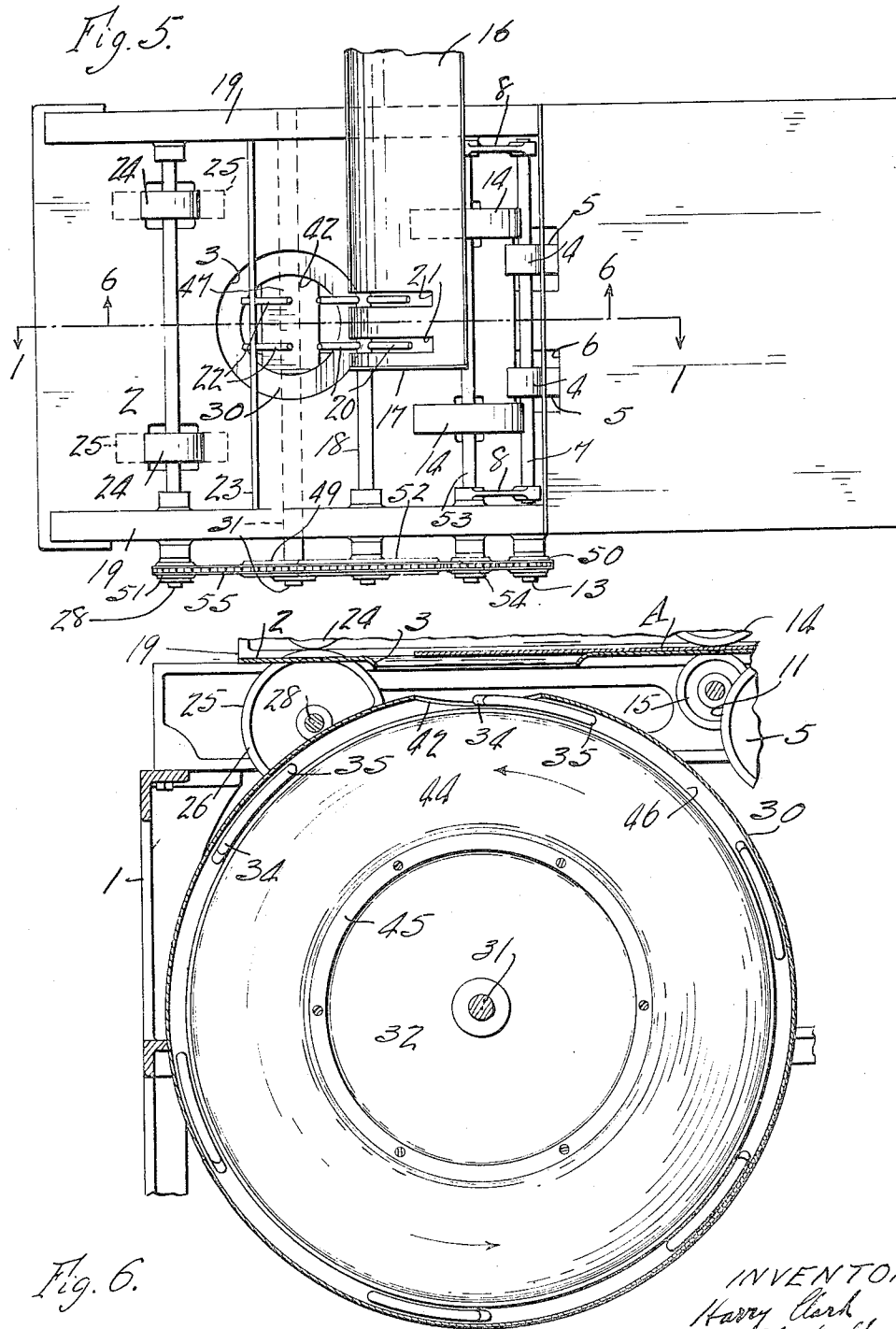
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METHOD AND APPARATUS FOR WRAPPING ARTICLES

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4 Sheets-Sheet 3



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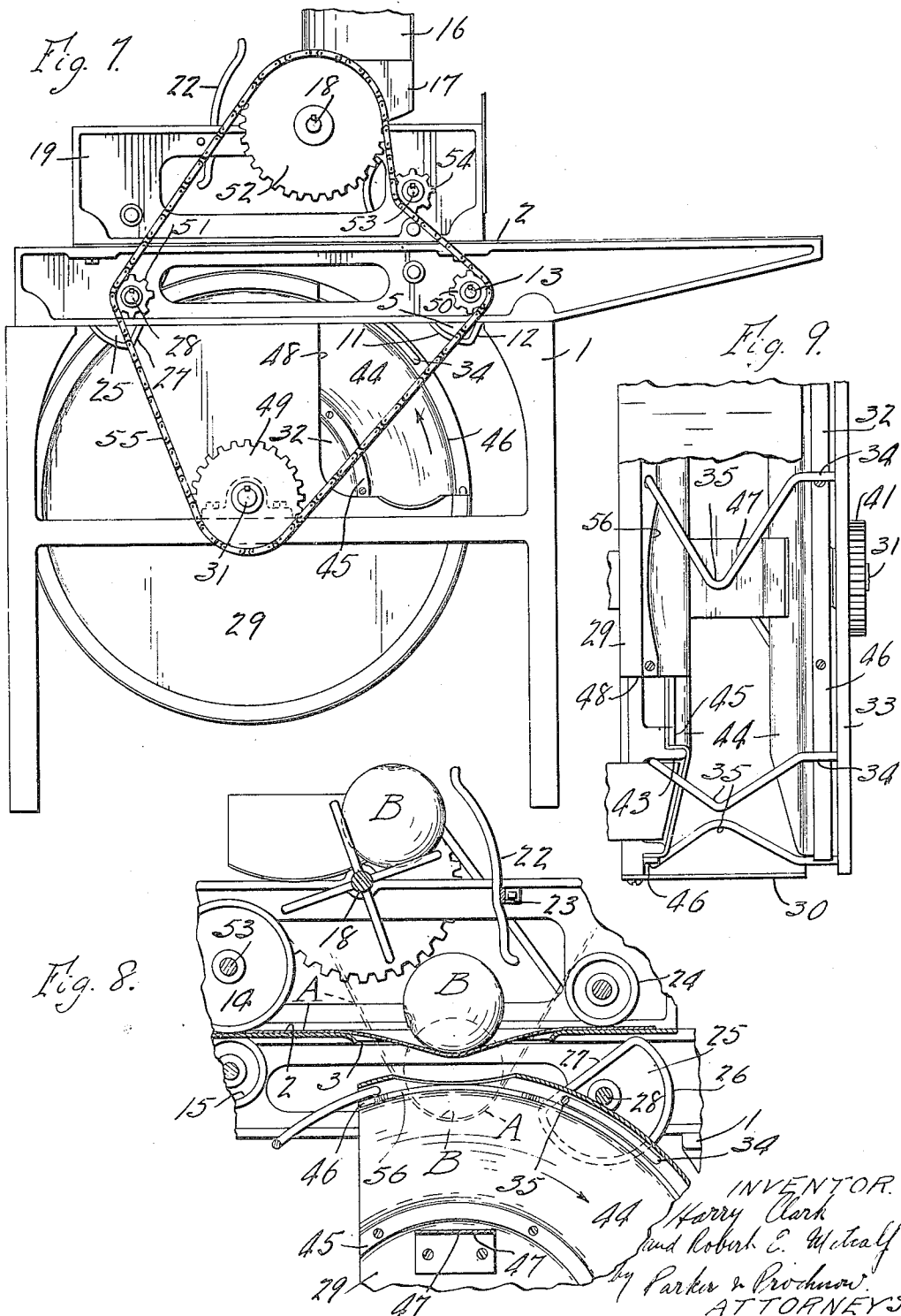
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METHOD AND APPARATUS FOR WRAPPING ARTICLES

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4 Sheets-Sheet 4



UNITED STATES PATENT OFFICE

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METHOD AND APPARATUS FOR WRAPPING ARTICLES

Application filed October 27, 1928. Serial No. 315,514.

This invention relates to the wrapping of articles in sheets of paper or the like, and is particularly applicable in the wrapping of fruit in individual wrappers.

5 An object of the invention is to provide an improved method and apparatus for the wrapping of articles in individual sheets of paper or the like.

Another object of the invention is to provide an improved machine for automatically wrapping articles in sheets of paper or the like, which will wrap the articles in a manner to prevent them from becoming unwrapped while being rolled or handled at subsequent times; with which the wrapping of an article in more than one sheet will be effectively prevented; which will wrap articles of various sizes and of different shapes without material injury to the articles or tearing of the sheets; and which will be continuous in operation, and relatively compact, rapid, durable and inexpensive.

Another object of the invention is to provide an improved method of wrapping articles in sheets of paper or the like, with which the wrapped articles will stay wrapped while being subsequently handled and rolled.

Various other objects and advantages will be apparent from the following description of an embodiment of the invention, and the novel features will be pointed out hereinafter in connection with the appended claims.

In the accompanying drawings:

Fig. 1 is a sectional elevation of a machine constructed in accordance with this invention, and illustrating one embodiment thereof, the section being taken approximately along the line 1—1 of Fig. 5;

Fig. 2 is a fragmentary elevation of a portion of the machine as viewed along the line 2—2 of Fig. 1, but with the periphery of the housing removed;

Fig. 3 is another sectional elevation of the machine, the section being taken approximately along the line 3—3 of Fig. 1;

Fig. 4 is a sectional elevation of a portion of the machine, and illustrating the manner of handling an article while being wrapped; Fig. 5 is a plan of the machine;

Fig. 6 is another sectional elevation of a portion of the machine, with the section taken approximately along the line 6—6 of Fig. 5;

Fig. 7 is a side elevation of the machine;

Fig. 8 is a sectional elevation of a portion of the machine, somewhat similar to Fig. 1, but illustrating the parts in a different operative relation to one another from that shown in Fig. 1; and

Fig. 9 is a plan of a portion of the machine as viewed along the line 9—9 of Fig. 1.

In the illustrated embodiment of the invention, a frame 1 is provided with a substantially horizontal table or support 2 for supporting the wrapping sheets A in outspread condition. The support 2 is provided with an aperture 3 smaller in size than a wrapping sheet but large enough to permit the passage freely therethrough of one of the articles B to be wrapped.

Rollers 4 and 5, (Fig. 1) are arranged at opposite sides of the table or support 2 for feeding the wrapping sheets over said table into a position over the aperture 3. The table 2 may have openings 6 through which the lower rollers 5 extend so as to have driving or feeding contact with the upper rollers 4.

The rollers 4 may be mounted on a shaft 7 which in turn is mounted in the free ends of a pair of arms 8, which arms are in turn pivoted at their other ends on pivots 9, (Fig. 1). The rollers 4 may therefore float vertically so as to yield upwardly when a sheet is fed between them and the rollers 5.

Downward movement of the rollers 4 may be limited by stops 10 disposed in the path of movement of the arms 8, Fig. 1.

Each lower roller 5 has a peripheral portion of circular shape, with the center of curvature at approximately the center of rotation of the roller 5, and also a reentrant or flat

section 12 which is nearer the axis of rotation of the roller than the peripheral portion 11. The lower rollers 5 are fixed on a shaft 13 which is positively driven in a manner to be explained hereinafter, and the rollers 5 are so positioned on the shaft 13 that their flat sections 12 will be in the same plane at any time.

When the rollers 5 are rotated, the arcuate peripheral portions 11 will have driving engagement with the upper rollers 4 and will feed a sheet across the table or support 2, and when the flat sections 12 reach the rollers 4, the rollers 4 will be held out of contact with the flat sections 12 for a short interval of time while the flat sections 12 travel past the rollers 4.

During this interval an additional sheet may be interposed between the rollers 4 and 5, so that when the other ends of the arcuate sections 11 of the rollers 5 reach the upper rollers 4, this additional sheet will be gripped between the rollers and fed across the table or support 2. The feeding by the rollers 4 and 5 stops when the flat sections 12 reach the rollers 4.

It is desirable that the sheet fed across the support 2 between rollers 4 and 5 be further advanced so as to leave the rollers 4 and 5 free to feed another sheet, and for that reason additional rollers 14, and 15, Fig. 1, are preferably disposed above and below the support 2 and between the rollers 4 and 5 and the aperture 3. The rollers 14 and 15 are engageable with one another through suitable apertures in the support 2 so as to receive the sheets from the rollers 4 and 5 and advance them further into a position directly over the aperture 3 of the support.

The articles to be wrapped are fed to the machine in any suitable guide, such as along a shallow trough or guide 16, and this guide is inclined in a direction to cause the articles to roll down the same by gravity and against an end wall or stop 17. A shaft 18 is rotatably mounted in a superstructure 19 of the frame 1, and this shaft intermediate of its end mounts two sets of radial arms 20 which during rotation move upwardly in spaced pairs through slots 21 in the guide 16 and adjacent the stop 17.

The sets of arms 20 are spaced apart along the shaft slightly and so positioned with respect to the stop or end wall 17 as to be directly beneath an article to be wrapped when the article abuts the stop 17. Thus when the shaft 18 is rotated, one pair of arms 20 will engage the article to be wrapped, lift it from the guide 16, carry it over the shaft 18, and drop it upon the support 2 directly over or centrally of the aperture 3 of the support.

The articles B to be wrapped are received between successive radial arms of each set as indicated in Fig. 1, and to insure release of the articles at exactly the same position over

the aperture 3, guide bars 22 may be mounted at the side of the shaft 18 opposite from the guide 16, so that the articles will engage with the bars 22 and be confined between the arms 20 by the bars 22 until the arms 20 always reach the same angular position. The bars 22 may be mounted upon a cross bar 23 of the superstructure 19 of the frame 1.

When a wrapping sheet A is disposed upon the support 2 over the aperture 3, and an article B is discharged by the arms 20 centrally of the aperture 3, the article will drop centrally upon the sheet and carry the sheet through the aperture 3. Since the aperture 3 is smaller than the sheet, the free edges of the sheet will be gathered together to some extent as the article and sheet pass through the aperture.

It will be observed that if an article is not dropped for each sheet placed over the aperture 3 and another sheet is fed into position over the aperture 3, the next article passing through will be wrapped in two sheets, which is an undesirable occurrence. Accordingly provision is made for removing a sheet if an article is not dropped thereon before the next sheet is fed into position over the aperture 3. For this purpose, feed rollers 24 and 25 are provided on opposite faces of the support 2 at the side of the aperture 3 opposite from the rollers 4 and 5.

The lower rollers 25 project upwardly through openings in the support 2 and have driving or feeding engagement with the upper rollers 24. The lower rollers 25 are similar to the rollers 5 in that they have circular peripheral sections 26 and flat sections 27, (Fig. 8). When the flat sections 27 are adjacent the upper rollers 24, the rollers 24 and 25 will be out of contact with one another, and therefore one of the wrapping sheets may lie between the rollers 24 and 25 and be unaffected thereby. The rollers 25 are fixedly mounted on a shaft 28 which is positively driven, in a manner to be hereinafter explained, in correlated relation to the shafts 13 and 18. If the wrapping sheet on the support 2 is not removed from between the rollers 24 and 25 during the interval when the flat sections 27 are adjacent the rollers 24, the peripheral portions 26 of the lower rollers 25 will engage with the wrapping sheet and co-operating with rollers 24 will carry it away from its position over the aperture 3 during the feeding of another sheet across the support 2.

An approximately circular plate 29, (Fig. 3), is mounted on the frame 1 in any suitable manner, and an arcuate plate 30 is secured to the periphery of the plate 29 in any suitable manner so as to form therewith an approximately cylindrical housing, one end of which is formed by the plate 29 and the other end of which is open.

A shaft 31 extends through the plate 29

approximately along the longitudinal axis of the housing, and is rotatably mounted in the plate 29 and also upon the frame 1. A plate 32 is fixed upon the shaft 31 in the open end of the housing so as to form a closing end wall for the otherwise open end of the housing, but the periphery of the plate 32 is spaced slightly from the peripheral plate or wall 30 of the housing for a purpose which will appear shortly.

A member 33, (Fig. 3) is rotatably mounted upon the shaft 31 adjacent the outer face of the plate 32, and is provided with a plurality of arms 34 which project past the outer periphery of the plate 32 and into the cylindrical housing in close proximity to the inner periphery of the wall 30 thereof. When the member 33 is rotated, the arms 34 will be caused to travel peripherally of the housing along the inner face of the wall 30. The portions of the arms 34 within the housing are preferably made V-shaped so as to provide a bend or fork 35 in each arm within the housing, and the V's all open in the same direction peripherally of the housing.

A driving or power shaft 36, (Fig. 3) is rotatably mounted in the frame 1 in any suitable manner, and it may be driven from any suitable source of power, such as by power applied to a pulley 37 on the shaft 36. The shaft 36 carries a gear 38 which meshes with and drives a gear 39, which in turn is keyed or fixed to the shaft 31, and the gear ratio between the gears 38 and 39 may be one to one.

The shaft 36 also carries a gear 40 which meshes with and drives a gear 41 which may be secured to or formed as a part of the member 33, and the gear 40 is approximately half the size of the gear 41, so that for each rotation of the shaft 36, the member 33 will be rotated through a half revolution.

Therefore, the shaft 36 will drive both the end plate 32 of the housing and the member 33 in the same direction, but with the member 33 rotating at half the rate of rotation of the plate 32.

The cylindrical housing is disposed immediately below the support 2, and the aperture 3 thereof, and the peripheral wall 30 of the housing is provided with an aperture 42 which is substantially aligned vertically with the aperture 3 and smaller than the wrapping sheet, so that when an article to be wrapped, and the wrapping sheet which is over the aperture 3 when the article was discharged thereover, move downwardly through the aperture 3, they will also pass through the aperture 42 into the housing.

The inner faces of the plates 29 and 32 are provided with arcuate or approximately annular recesses 43 which may be formed by ribs projecting from the inner faces of the plates, and these recesses 43 are adjacent the peripheries of the plates. The recesses are shallower at their outermost sides, and their

open faces are closed by membranes or sheets 44 which are stretched taut across the recesses and anchored in any suitable manner, such as by rings or plates 45 and 46.

The membranes or sheets 44 will thus converge inwardly towards the axis of the shaft 31, or in other words diverge outwardly so as to form a wedge-like space into which the partially wrapped articles will be received through the aperture 42. The membranes or sheets 44 may be of any suitable textile material or of rubber or other resilient flexible sheeting which will remain taut and which will resiliently yield slightly when an article to be wrapped is received in the wedge-shaped space, and frictionally grip the article without injury thereto.

A narrow rest 47 secured to the stationary plate or end wall 29 within the housing, extends across the housing at the upper side thereof below the aperture 42 and then extends outwardly along the membrane 44 of the rotatable end wall. The partially wrapped article entering the housing through the aperture 42 will be received in the wedge-shaped pocket formed by the rest 47, and the adjacent portion of the membrane 44 of the stationary end wall.

The article so received will be held in this position, with the free edges of the wrapping sheet projecting through the aperture 42 as will appear from Fig. 1. During rotation of the member 33, the open side of the V of an arm 34 will move across the aperture 42 and collect together the free edges of the wrapping sheet, as appears in Fig. 1, and draw them together against the edges of the aperture 42, and then bend the free edges over against the inner periphery of the wall 30 of the housing.

The arm 34 by reason of the bending of the free edges thereover will then draw the wrapping sheet and enclosed article with it in an arcuate path around the housing, and thus will immediately dislodge the article from its position on the rest 47. The article will then be supported between the membrane 44 on the stationary end wall and the membrane 44 on the rotating end wall, whereupon the end wall 32 in rotating will roll the article along the other and stationary end wall in the same direction that the article is being carried by the arm 34.

Since the article will be rolled along the stationary end wall at a linear speed corresponding to half the linear rate of travel of the contacting portion of the rotatable end wall, the article will actually travel through the housing, by its rolling, at approximately the same rate of speed as the arm 34 which draws it through the housing.

The free edges of the sheet by being folded and held in close proximity to the inner periphery of the wall 30 will be prevented from rotating with the article, and hence the free

edges of the sheet between the article and the arm 34 will be twisted into a stem. As the twisting continues, the free edges of the sheet will be gradually drawn from around the arm 34 until completely released therefrom, the various stages of the twisting and releasing being shown clearly in Fig. 1.

The plate or end wall 29 is provided with a door or opening 48, which will be reached by the wrapped article just before it again reaches the entrance aperture 42, as shown in Fig. 1. The membrane 44 of the stationary end wall 29 is of course omitted at this door 48 and the article becomes disengaged from its arm 34 at about the time it reaches this door or opening 48, with the result that the article will then fall or roll out through the opening 48 and be carried away in any suitable manner not shown.

The resiliency of the membrane on the rotating end wall usually assists in forcing the released article through the opening 48, but if the wrapped article becomes released before it reaches the opening 48, it will be carried up by the article next in the rear and will then roll out through the opening 48. If the wrapped article does not become released before the opening 48 is reached the article will be suspended entirely from the arm 34, because the peripheral wall 30 is also cut away at the opening 48, and the bent over edges will be entirely free and may disengage themselves from the arm by the weight of the article, whereupon the article may roll out of the opening 48.

It is important that the twisted stem formed by the twisting together of the free edges of a sheet be held against untwisting during subsequent handling of the wrapped article, such as while it is being rolled or packed.

Accordingly, the bend in each arm 34 which forms the point or the base of the V is located at a point therein which is somewhat offset laterally to one side of the axis of rotation of each article, while being rolled, as will be apparent from the center lines of the fruit and bend as designated in Fig. 3.

By reason of this offset, the twisting of the free edges of the sheet into the stem will occur slightly at one side of the bend 35 in the V, and as a result, the twisted stem itself will be further twisted spirally about itself, somewhat like the twist in a pig's tail, and as shown in Figs. 1, 2 and 4. This additional twist of the twisted stem effectively prevents unwrapping or twisting of the stem when the wrapped article is released and rolled or handled.

The shaft 31 extends to one side of the frame 1 and mounts a sprocket wheel 49, (Figs. 1, 3 and 8). The shaft 13 also extends to the same side of the frame and carries a driving sprocket wheel 50. The shaft 28 also extends to the same side of the

frame and carries a driving sprocket wheel 51. Shaft 18 similarly extends to the same side of the machine and mounts a driving wheel 52.

The rollers 14 are mounted upon a shaft 53 and this shaft similarly extends to the same side of the frame and mounts a driving sprocket wheel 54. An endless driving chain 55 is connected over all of the sprocket wheels 49, 50, 51, 52, and 54, so that all of the feeding rollers and the discharging arms 20 will be operated together from the power shaft 36, concomitantly with the rotation of the plate 32 and member 33.

To prevent binding of the articles when first received in the housing, the stationary end wall 29 may, if desired, have a concave portion 56 (Fig. 9) and the membrane 44 covering the same is similarly made concave adjacent the rest 47.

Accordingly, when the article is first received in the housing, it may be supported rather loosely so as to offer a minimum resistance to the removal of the article as the gathered edges of the article are first moved by the arm 44.

In the operation of the machine, the articles to be wrapped are fed to the machine by the chute or guide 16, whose bottom wall is preferably shallow and of large radius or curvature as illustrated in Fig. 1 so that when the articles are of irregular shape, or elliptical as in the case of lemons, they will, in rolling down the guide, all roll into similar positions with respect to the guide, that is, with their major axis crosswise of the guide, and therefore all of the articles when picked up and discharged, will be discharged with their major axis vertical.

With such articles the twisting of the free edges will occur at one end of the major axis of the article, so as not to interfere with rolling of the articles after being wrapped and released, and when the stem is at one end of the major axis any rolling would have a minimum tendency to unwrap the twisted edges.

The wrapping sheets are fed in succession to the rollers 4 and 5 in any suitable or desired manner, and such feeding may be automatic or by hand, as may be desired, such details having been omitted from this description and drawing because per se sheet feeding devices are separate invention and of general application.

Power is applied to the shaft 36, whereupon the wrapping sheets will be fed in succession across the support or table 2 and stopped temporarily in a position over the aperture 3 of the support. The sprocket wheels 49, 50, 51, 52 and 53 are of sizes such that the desired order and durations of operations will be in a proper co-related relation to one another for accomplishing the purposes of the machine as herein set forth.

During the operation, a sheet will be inserted either automatically or manually between the rollers 4 and 5, while the flat sections 12 of the rollers 5 are adjacent the rollers 4. The rear end of the flat edge section 12 will reach the related roller 4 at the time that the feeding of a sheet is desired, and as the arcuate section 11 of each roller 5 comes adjacent the roller 4, the interposed wrapping sheet will be propelled forwardly across the support 2 and between the rollers 14 and 15. The latter continue and assist with the feeding of the sheet until the sheet is approximately centrally over the aperture 3 and with its forward end between the rollers 24 and 25, at which time the sheet will have cleared the rollers 14 and 15.

It will be understood, however, that the rollers 24 and 25 will assist in propelling the forward edge of the sheet until the sheet is centrally over the aperture 3. At that time the flat section 27 of each roller 25 will be adjacent the related roller 24, and therefore the sheet will be free of all sets of rollers for an interval during continued rotation of all the rollers.

In the meantime the arms 20 of the article discharge apparatus have picked up an article 16, lifted it over the shaft 18 and against the guide bars 22, so that during the interval in which the wrapping sheet is stationary over the aperture 3, an article will be released from between the bars 22 and the radial arms 20. The released article falls to the support 2 and strikes the wrapping sheet which is outspread over the aperture 3.

The article carries the sheet with it through the aperture 3 and also through aperture 42 into the housing until stopped by the membrane 44 on the stationary end wall 29 and the rest 47.

As the article and sheet move through the aperture 3, the free edges of the sheet will be necessarily gathered together to some extent, as will be observed from Fig. 1, and will project through the aperture 42 and possibly also to some extent through the aperture 3.

The shaft 36 continues to rotate however, and a V-shaped arm 34 will approach the aperture 42 on the inside of the housing, completely gather together the free edges of the sheet which project through the aperture 42, and draw the sheets together against an edge of the aperture 42. Then during further movement of the arm 34, the free edges will be bent over the arm 34 by the peripheral wall 30 of the housing, and will be confined over the arm 34 by the wall 30 of the housing.

Since the free edges of the sheet will be bent over the arm, the arm will draw the sheet and article with it, dislodge them from the rest 47, and place them between the stationary end wall 29 and a rotating end wall or plate 32. The membranes 44 which grip the article will yieldingly hold the article with-

out injury thereto, and the plate 32 in rotating will roll the enclosed article and sheet along the stationary end wall in an arcuate path through the housing at approximately the same rate of speed that the article is being moved by the arm 34 which engages it.

The gathered edges are confined in a somewhat flat condition over the arm 34 and will therefore be held against turning. The rotation of the article as it is rolled along the stationary end wall will cause a twisting of the sheet between the article and the bent over portions of the free edges into a stem. As the twisting continues, the free edges will be gradually pulled from over the arm 34 which is moving the article until the article is completely released, which release is timed to occur at approximately the time that the article reaches the discharge opening 48.

Owing to the fact that the bend 35 of each arm is slightly offset from or at one side of the axis of rotation of each article during its travel, the stem formed by the twisted edges will itself twist over the bend 35 and be further twisted helically somewhat like the twist in a pig's tail. This additional twisting of the stem formed by the twisted edges has been found to effectively prevent unwrapping of the twisted edges during subsequent handling of the wrapped articles. The various steps in the twisting of the free edges are shown in Fig. 1, and when the articles reach the openings 48 they are released and discharged from the machine.

If for any reason an article is not picked up by the radial arms 20 and discharged as expected, the sheet will remain upon the support 2 while another sheet is being advanced over the support. At this time the flat sections 27 of the rollers 25 will pass the rollers 24, and the arcuate peripheral sections 26 of the rollers 25 will reengage with the sheet previously in position over the aperture 3 and continue to propel it from its position on the support 2 to one side of the machine while the next successive sheet moves into position over the aperture 3.

Thus, if an article fails to go through the aperture 3 at the expected time, the sheet will be removed from the machine, so that when the next article moves through the aperture 3, it will take with it but a single wrapping sheet. The operation may proceed continuously and without special attention from the operator, except for the feeding of the wrapping sheets to the rollers 4 and 5 and the feeding of the articles to the guide 16. However, as explained, the sheets may be fed automatically in any desired manner and the articles to be wrapped may be similarly fed to the guide 16 automatically.

The operation is continuous and rapid and the wrapping is accomplished without injury to the articles or to the wrapping sheets.

It will be obvious that various changes in the details, which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention as expressed in the appended claims.

Claims:

1. A machine for wrapping articles in sheets of paper, comprising a support for holding a sheet outspread and having an aperture smaller than the sheet through which an article and the sheet may pass, together when deposited thereon over said aperture, means for gathering together the edges of said sheet which last pass through said aperture to complete the enclosure of the articles, holding said edges and through said edges drawing the enclosed article in a prescribed path, and means for rotating the enclosed article while so moving about the held edges to twist the gathered edges and prevent unwrapping of the enclosed article when the wrapped article is released.

2. A machine for wrapping articles in sheets of paper, comprising a support for holding a sheet outspread and having an aperture, smaller than the sheet through which an article and the sheet may pass together when deposited thereon over said aperture, means for mechanically depositing said sheet in outspread condition on said support over said aperture, means for depositing an article upon said sheet over said aperture whereby said article will pass through the aperture, carry the sheet with it and be partially enclosed by the sheet, means for gathering together the edges of said sheet which last pass through said aperture to complete the enclosure of the article, holding said edges and moving the enclosed article in a prescribed path, and means including relatively traveling opposed walls between which the article is moved, for rotating the enclosed article while so moving about the held edges to twist the gathered edges and prevent unwrapping of the enclosed article when the wrapped article is released.

3. A machine for wrapping articles in sheets of paper, comprising a support for holding a sheet outspread and having an aperture smaller than the sheet through which an article and a sheet may pass together when deposited thereon over said aperture, means for receiving said article and sheet at a position, just after the article has passed through the aperture and holding the projecting free edges of the sheet partially together, means for gathering together and holding the projecting free edges of the sheet, and means including opposed relatively moving walls between which the article and its sheet are rolled along for rotating the enclosed article to twist the held free edges of the sheet.

4. A machine for wrapping articles in

sheets of paper, comprising a support for holding a sheet outspread and having an aperture smaller than the sheet through which an article and the sheet may pass together when deposited thereon over said aperture, means for gathering together the free edges of the sheet which last pass through said aperture to complete the enclosure of the article and means for twisting the gathered edges together into a stem and also coiling said stem about itself to prevent unwrapping of the article when discharged.

5. A machine for wrapping articles in sheets of paper comprising means for gathering together and holding the free edges of a sheet wrapped around an article, and means including opposed walls having relative movement for receiving between them and rotating said article and enclosing portion of the sheet, and rolling it along one of said walls to twist the free edges together into a stem, and cooperating with said holding means to also concomitantly coil said stem about itself and prevent untwisting of the edges when the article is released.

6. A machine for wrapping articles in sheets of paper comprising a housing having an opening through which may be passed an article partially enclosed in a sheet, with the free edges of the sheet gathered partially together, a rod movable along said housing in close proximity to a wall thereof and past said opening in a direction to grasp the gathered edges of the sheet and draw them through the housing in close proximity to said wall, whereby the free ends of the strips which extend beyond the rod will be held between the rod and wall against turning, and means for rotating the article and the section of the sheet enclosing it during its travel with said rod, whereby the gathered edges will be twisted together into a stem and gradually disengaged from said rod.

7. A machine for wrapping articles in sheets of paper comprising a housing having an opening through which may be passed an article partially enclosed in a sheet, with the free edges of the sheet gathered partially together, a rod movable along said housing in close proximity to a wall thereof and past said opening in a direction to grasp the gathered edges of the sheet and draw them through the housing in close proximity to said wall, whereby the free ends of the strips which extend beyond the rod will be held between the rod and wall against turning, and means for rotating the article and the section of the sheet enclosing it during its travel with said rod, whereby the gathered edges will be twisted together into a stem and gradually disengaged from said rod, said rod having a bend therein offset from the axis of rotation of the article, whereby the twisted stem of said edges will itself be twisted to prevent

untwisting of the edges when the article is released.

8. A machine for wrapping articles in sheets of paper, comprising a wall having an aperture through which an article partially enclosed in a sheet may be passed with the free edges of the sheet gathered partially together and projecting through the aperture, a V-shaped rod movable across said aperture and closely along said wall, and cooperating with an edge of the aperture for completely drawing together the gathered edges, and moving the article and sheet along said wall, the edge of the aperture folding the free edges over the rod and confining them in folded over position during travel of said rod along said wall, and means operable upon the article while the article is traveling with said rod for twisting the free edges into a stem and gradually releasing the stem from said rod.

9. A machine for wrapping articles in sheets of paper, comprising a wall having an aperture through which an article partially enclosed in a sheet may be passed with the free edges of the sheet gathered together and projecting through the aperture, a V-shaped rod movable across said aperture and closely along said wall, and cooperating with an edge of the aperture for completely drawing together the gathered edges and moving the article and sheet along said wall, the edge of the aperture folding the free edges over the rod and confining them in folded over position during travel of said rod along said wall, and means operable upon the article while the article is traveling with said rod for twisting the free edges into a stem and gradually releasing the stem from said rod, the point of the V of said rod being offset from the axis of twisting of the article, whereby the stem formed by the twisted edges will itself be twisted around the bend in the V of the rod to prevent untwisting of the stem when the article is released from said rod.

10. A machine for wrapping articles in sheets of paper, comprising a support for holding a sheet outspread and having an aperture smaller than the sheet through which an article and the sheet may pass together when deposited thereon over said aperture, means for feeding the sheets in succession to said support over said aperture, means for depositing articles to be wrapped in succession upon the sheets over said aperture, means for receiving the article and sheet after the two pass through the aperture, and for completing the wrapping of the sheet about the article, and means for withdrawing any sheet from the support automatically if it is not removed through said aperture by the deposit of an article thereon before the next sheet is fed to said support.

11. A machine for wrapping articles in

sheets of paper, comprising a support for holding a sheet outspread and having an aperture smaller than the sheet through which an article and a sheet may pass together when the article is deposited upon the sheet over said aperture, means for feeding said sheets to said support over the aperture in succession, means for depositing the articles in succession on the sheets on said support over said aperture, whereby each deposited article will carry a sheet through said aperture and be partially enveloped through the gathering together of the edges of the sheet by the edges of the aperture, means for receiving the article and enveloping sheet from said aperture and twisting together the free edges of the sheet, a pair of rollers between which the sheets are fed when over the aperture in said support, one of said rollers having a portion of its periphery nearer its axis of rotation than the remainder, whereby when that nearer peripheral portion of the roller is adjacent the other roller, the sheet between the rollers will be free to move independently of the rollers to permit withdrawal of the sheet by an article deposited thereon, rotation of the rollers being so related to said feeding means that any sheet in position over said aperture when the next sheet is moved over the aperture will be engaged by the two rollers and withdrawn from the support.

12. A machine for wrapping articles in sheets of paper, comprising a relatively stationary, cylindrical housing open at one end and having an aperture in its periphery, and end wall for the open end of said housing mounted for rotation about the axis of said housing, the inner faces of said rotatable end wall and the end wall of the stationary housing being annularly recessed adjacent their periphery with the recesses covered by taut, flexible, resilient material, said material converging inwardly toward said axis of rotation, whereby when an article, partially enclosed in a sheet with the edges of the sheet partially gathered together about the article, is disposed in said housing, it may be yieldingly wedged between the opposing coverings and rolled along the covering on the stationary end wall by the rotation of the rotatable end wall, the stationary end wall having an opening at a distance from said aperture through which the wrapped articles may be discharged, means also movable in said housing along the peripheral wall thereof at approximately half the rate of rotation of said end wall, for grasping the gathered edges of a sheet enveloping an article and holding the same against the inner periphery of the housing and carrying the article around said housing, the rolling of said article by the rotatable end wall serving to twist the gathered edges into a stem.

13. A machine for wrapping articles in sheets of paper, comprising a substantially

cylindrical housing having an open end, and end wall for said open end disposed in the open end and mounted for rotation about the longitudinal axis of said housing, the end walls having annular grooves on their end faces adjacent their periphery, a flexible, taut, resilient covering over each groove, the covering of the grooves diverging outwardly from said axis, whereby an article disposed between the end walls of the housing may be wedged between the coverings and rolled in an arcuate path around the inside of the housing by the rotation of the movable end wall, a member also rotatable about said axis and having a V-shaped arm projecting therefrom into the housing in close proximity to the peripheral wall thereof, and movable along the peripheral wall by rotation of said member, with the open side of the V advancing, said housing having an aperture in its periphery through which may be inserted articles around which a sheet has been partially wrapped with the free edges of the sheet collected together and projecting through said aperture, whereby as said arm travels along the inner periphery of said housing, the open side of the V will collect the projecting free edges of the sheet, draw them together and fold them over between the arm and the housing, and draw the article and sheet together around the inner periphery of the housing, the rotatable end wall and said member rotating in the same direction at different speeds whereby the rotatable end wall will roll the article along said stationary end wall during the travel of the article with said arm, to cause a twisting of the gathered edges of the wrapping sheet into a stem, and the drawing of the edges from between the arm and housing.

14. A machine for wrapping articles in sheets of paper, comprising a stationary, cylindrical housing having an open end, a separate end wall for said opening and mounted for rotation about the axis of the housing, the periphery of said rotatable end wall being spaced from the periphery of the housing, and a member also rotatable about said axis and having an arm extending into the housing and along the inner periphery thereof, whereby upon rotation of said member, said arm will move along the inner periphery of said housing, the inner faces of the end walls of the housing along their periphery having contact portions diverging outwardly from said axis, at least one of said contact portions being of yieldable, resilient material, the periphery of said housing having an opening through which may be inserted articles around which a sheet has been wrapped, with the free edges of the sheet projecting through said opening, whereby said arm in moving with said member will gather together the free edges of the sheet, confine them between said arm and inner

periphery of the housing, and draw said article and its sheets along the inner periphery of said housing, the contact portions of said end walls wedgingly engaging and rolling the article and twisting the free edges of the wrapping sheet into a stem and disengaging the stem from said arm.

15. A machine for wrapping articles in sheets of paper, comprising a stationary, cylindrical housing having an open end, a separate end wall for said opening and mounted for rotation about the axis of the housing, the periphery of said rotatable end wall being spaced from the periphery of the housing, a member also rotatable about said axis and having an arm extending into the housing and along the inner periphery thereof, whereby upon rotation of said member, said arm will move along the inner periphery of said housing, the inner faces of the end walls of the housing along their periphery having contact portions diverging outwardly from said axis, at least one of said contact portions being of yieldable, resilient material, the periphery of said housing having an opening through which may be inserted articles around which a sheet has been partially wrapped, with the free edges of the sheet projecting through said opening, whereby said arm in moving with said member will gather together the free edges of the sheet, confine them between said arm and inner periphery of the housing, and draw said article and its sheet along the inner periphery of said housing, the contact portions of said end walls wedgingly engaging and rolling the article and twisting the free edges of the wrapping sheet into a stem and disengaging the stem from said arm, and means for rotating said member and end wall in the same direction, with said member rotating at one half the rate of rotation of said end wall.

16. A machine for wrapping articles in sheets of paper, comprising a stationary, cylindrical housing having an open end, a separate end wall for said opening and mounted for rotation about the axis of the housing, the periphery of said rotatable end wall being spaced from the periphery of the housing, a member also rotatable about said axis and having an arm extending into the housing and along the inner periphery thereof, whereby upon rotation of said member, said arm will move along the inner periphery of said housing, the inner faces of the end walls of the housing along their periphery having contact portions diverging outwardly from said axis, at least one of said contact portions being of yieldable, resilient material, the periphery of said housing having an opening through which may be inserted articles around which a sheet has been partially wrapped, with the free edges of the sheet projecting through said opening, whereby said arm in moving with said member will gather

together the free edges of the sheet, confine them between said arm and inner periphery of the housing, and draw said article and its sheet along the inner periphery of said housing, the contact portions of said end walls wedgingly engaging and rolling the article and twisting the free edges of the wrapping sheet into a stem and disengaging the stem from said arm, and means for rotating said member and end wall in the same direction, with said member rotating at one half the rate of rotation of said end wall, said arm having a bend therein adjacent to but slightly offset from the axis of rolling of the article between said end walls, whereby the stem formed by the twisted free edges of said sheet will be given a further twist about itself to prevent unwrapping of the sheet when the wrapped article is released.

17. A machine for wrapping articles in sheets of paper, comprising a support for holding a sheet outspread and having an aperture smaller than the sheet through which an article and the sheet may pass together when both are deposited thereon over said aperture, feeding rollers arranged in pairs at opposite ends of said support for feeding a sheet across said support and over said aperture, one roller of each pair having a section of its periphery nearer its axis of rotation than the remaining peripheral portion, whereby when said section is opposite the other roller of the pair, the sheet between the two will be released, means for discharging articles in succession upon said support over said aperture, whereby said articles falling on said support will pass through said aperture and draw a sheet around it and through said aperture, means for receiving the articles passing through said aperture and twisting together the free edges of the sheet, and means for driving said pairs of rollers and said article discharging means in such correlated relation to one another that the sheets will be fed in succession by one pair of rollers into position over said aperture in succession, an article discharged upon each sheet while the sheet is over said aperture, and the said section of the other pair of rollers will be out of contact with its related roller during the discharge of the article upon said sheet, whereby the sheet will be free to move with said article when the article is discharged thereon, and said other pair of rollers will engage with and remove a sheet from over the aperture if that sheet is not removed by an article before the next sheet reaches a position over said aperture.

18. A machine for wrapping articles in sheets of paper, comprising a support for holding a sheet outspread and having an aperture smaller than the sheet through which an article and a sheet may pass together when the article is deposited on a sheet over said aperture, means for receiving

the articles and sheets passing through said aperture and twisting together the free edges of the sheet, feeding rollers arranged in sets at opposite sides of said aperture for feeding sheets across said support and over said aperture, each set of feeding rollers including a pair of contacting rollers between which the sheets pass, and by which they are propelled over said support, one roller of each pair having a peripheral section nearer the center of rotation of that roller than the remaining periphery of the roller, whereby said section of each pair of rollers will clear the opposite roller of the pair for an interval during each revolution of the rollers, whereby the sheets being fed will each be free for an interval during its movement over said support and while it is over said aperture, means for discharging articles to be wrapped in succession, each article upon a sheet over said aperture during said interval to carry the sheet with it through said aperture, means for operating said discharging means and both of said sets of rollers in such correlated relation to one another that if a sheet over said aperture is not removed by an article discharge thereon, the second set of rollers will engage the sheet and withdraw it from its position over said aperture to permit the movement of another sheet over said aperture.

19. The method of wrapping articles in sheets of paper, which comprises depositing an article upon a sheet approximately centrally of the sheet, gathering together the free edges of the sheet to enclose the article, twisting the gathered edges of the sheet together to form a stem, and twisting the stem about itself to prevent unwrapping of the twisted edges.

20. The method of wrapping articles in sheets of paper, which comprises depositing an article upon a sheet approximately centrally of the sheet, enclosing the article by gathering together the free edges of the sheet, bending the gathered edges over an arm at a V-shaped bend therein, holding the gathered edges so bent over, and rotating the article about an axis offset to one side of the bend in said arm, to twist the gathered edges into a stem, and also concomitantly twist the stem about itself to prevent untwisting of the gathered edges when the wrapped article is released.

21. A machine for twisting together the free edges of a wrapping sheet which has been folded over an article to be wrapped, comprising a pair of spaced walls between which the article and its sheet may be wedged and supported, means for causing relative movement of said walls to roll the article and sheet along one of the walls, and means for holding the free edges of said sheet against rotation with the article to cause a twisting of said edges into a stem as the article rolls.

22. A machine for twisting together the

free edges of a wrapping sheet which has been folded over an article to be wrapped, comprising a pair of spaced walls between which the article and its sheet may be wedged and supported, means for causing relative movement of said walls to roll the article and sheet along one of the walls, means for holding the free edges of said sheet against rotation with the article to cause a twisting of said edges into a stem as the article rolls, and means for moving said holding means in the direction in which said article is rolled at approximately the rate at which the article rolls.

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