

S. M. LANGSTON.
 DELIVERY STAND FOR ROLLED MATERIAL.
 APPLICATION FILED MAY 31, 1919.

1,339,460.

Patented May 11, 1920.
 4 SHEETS—SHEET 1.

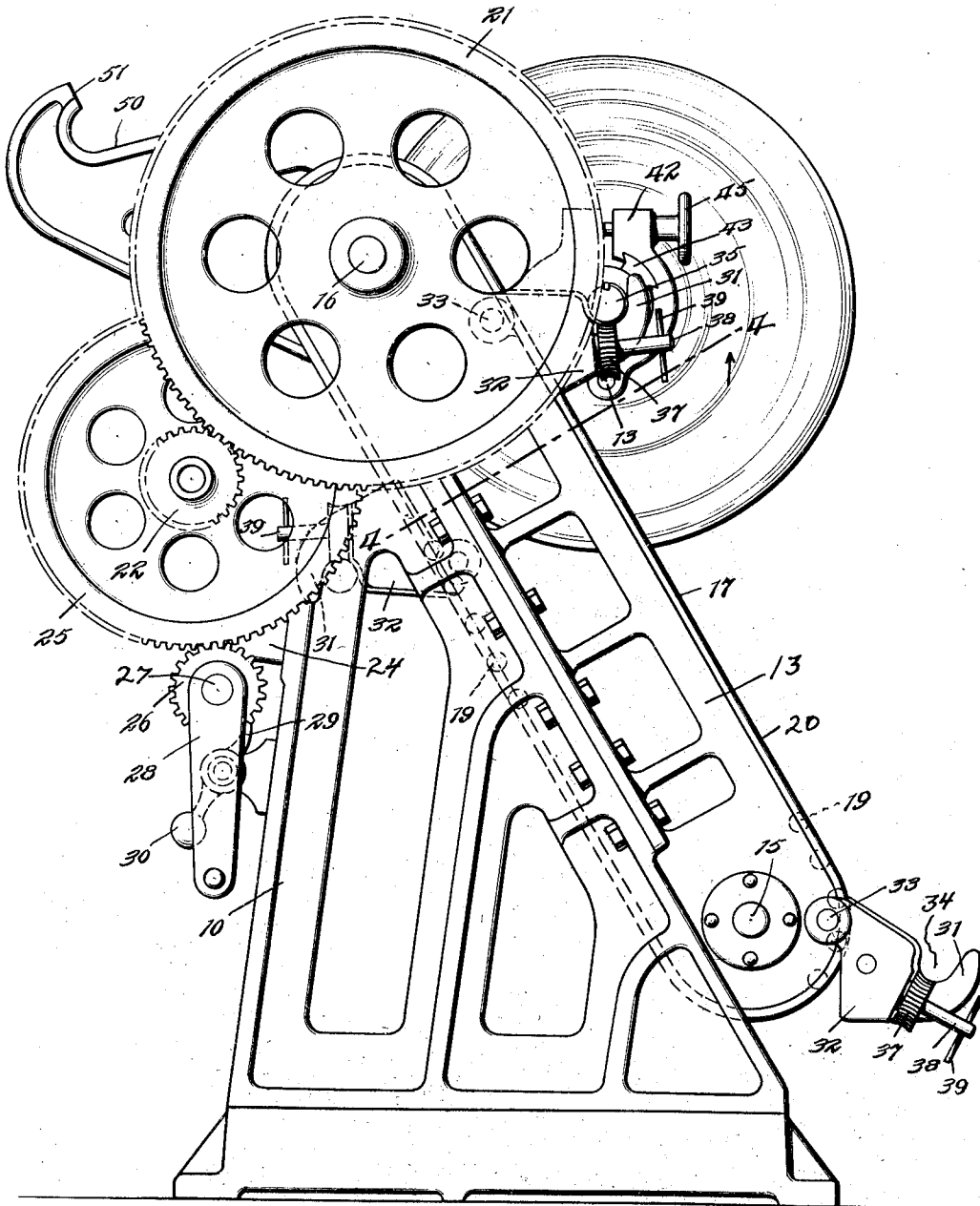


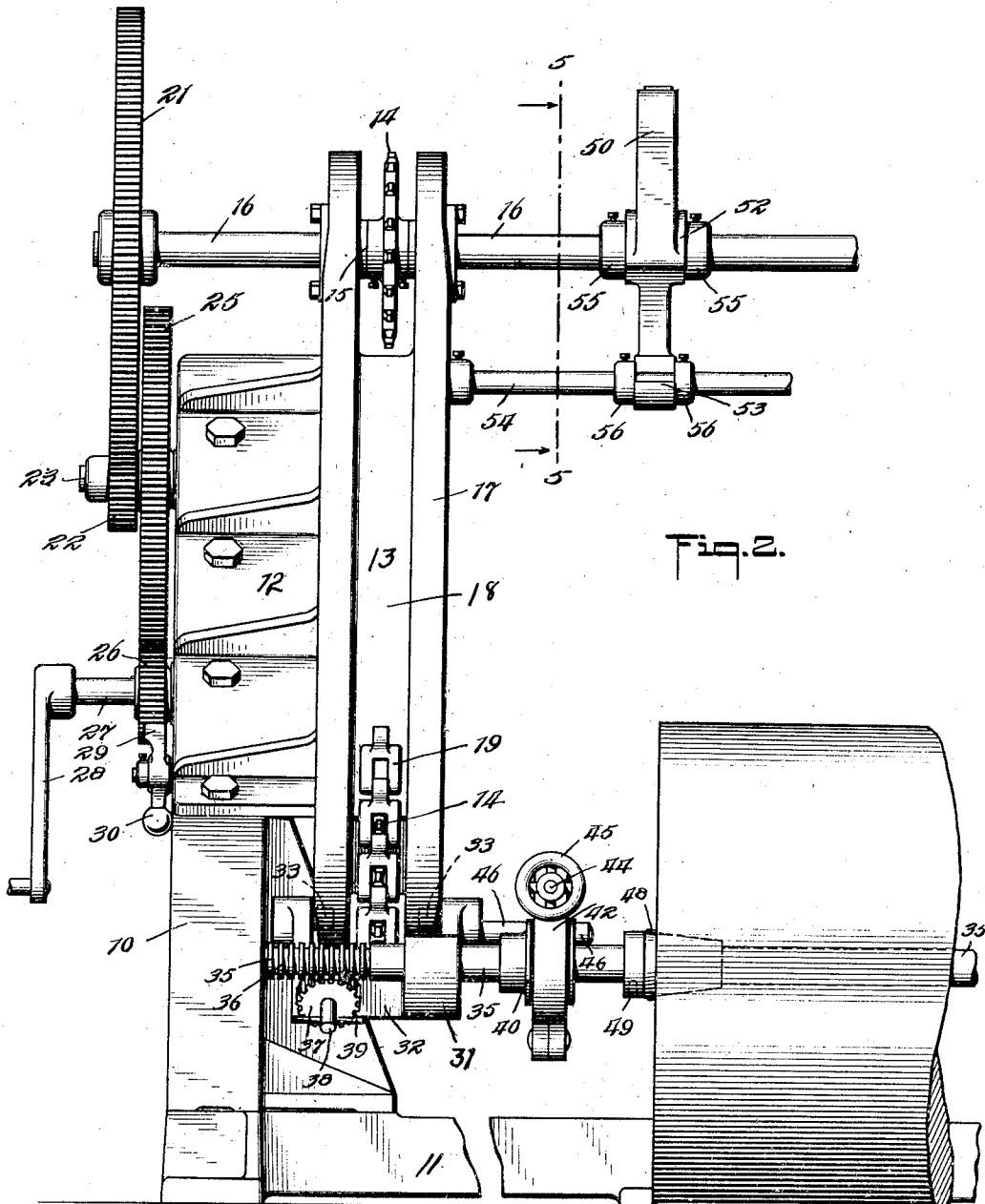
Fig. 1.

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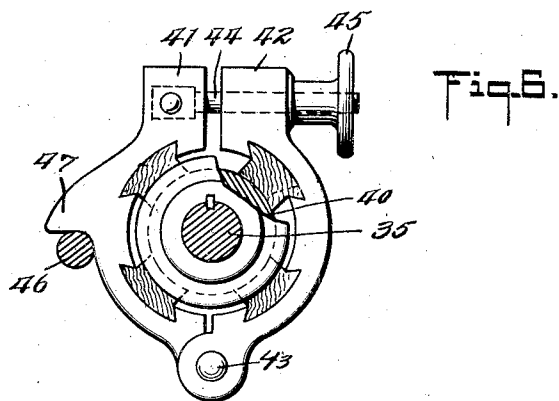
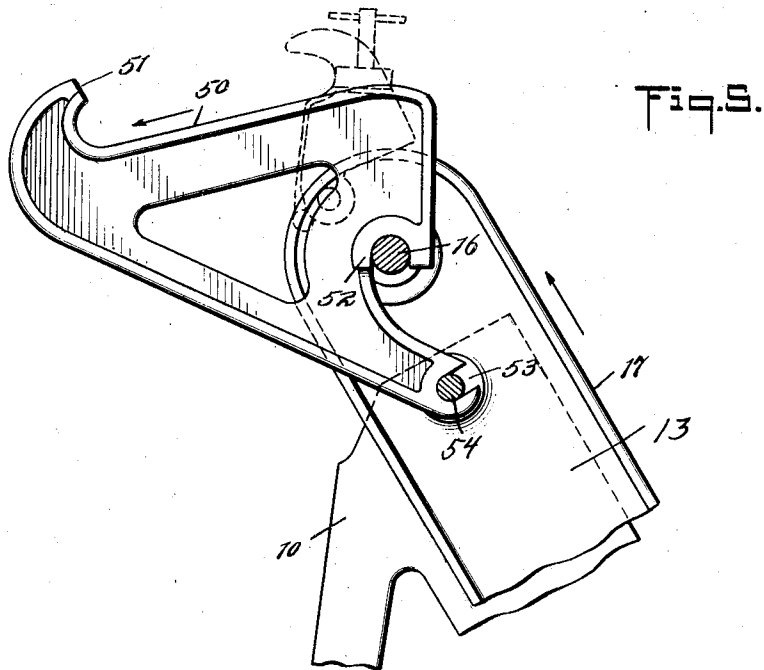
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UNITED STATES PATENT OFFICE.

SAMUEL M. LANGSTON, OF WENONAH, NEW JERSEY, ASSIGNOR TO SAMUEL M. LANGSTON COMPANY, OF CAMDEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

DELIVERY-STAND FOR ROLLED MATERIAL.

1,339,460.

Specification of Letters Patent.

Patented May 11, 1920.

Application filed May 31, 1919. Serial No. 301,029.

To all whom it may concern:

Be it known that I, SAMUEL M. LANGSTON, a citizen of the United States, and a resident of Wenonah, in the county of Gloucester, and State of New Jersey, have invented certain new and useful Improvements in Delivery-Stands for Rolled Material, of which the following is a specification.

This invention is adapted for use with or as a part of any kind of machine which receives, feeds, or operates on sheet material taken from a large or heavy roll. The machine may be any kind of a paper working machine for printing, corrugating, embossing, slitting, scoring, folding, pasting, re-rolling, or otherwise treating the sheet material withdrawn from the rotatably supported roll.

Among the important objects of my invention are to reduce the labor required in lifting the roll of material to delivery position, to reduce the time consumed in changing to a new roll when a previous one is used up, to permit a full roll to be brought into operative position before the previous one is exhausted, to facilitate the adjustment of the roll axially after it has been raised, and if desired, while the material is being delivered therefrom, and to provide the desired tension on the unrolling material which will operate the same irrespective of the degree of elevation or the extent of axial adjustment of the roll.

Only a part of these objects may be secured in some embodiments of my invention. In other words, certain features may be omitted without detracting from the desirability or satisfactory operating of other features but in a preferred embodiment, all of these objects are secured and various other important and valuable features are employed, which will be referred to more particularly hereinafter.

In the accompanying drawings, I have shown merely one form which my invention may assume and which is designed for supporting large heavy rolls of paper weighing more than one man can conveniently lift.

In these drawings:

Figure 1 is an end elevation of the machine.

Fig. 2 is a front view of one end of the machine.

Fig. 3 is a front view of the opposite end.

Fig. 4 is a section on the line 4—4 of Fig. 1.

Fig. 5 is a section on the lines 5—5 of Figs. 2 or 3.

Fig. 6 is a section on the line 6—6 of Fig. 4.

My improved machine in general includes a pair of elevators or endless conveyers having spaced means for engaging with the shafts of the paper rolls and lifting them to the desired elevation and supporting them so elevated while the material is being unwound from the shaft. Means are provided for axially adjusting the roll and its shaft to insure the proper feeding of the material to the paper working machine, and means are also provided for applying the desired tension to the sheet material. The roll may be raised barely clear of the floor and the sheet material delivered from the roll in this position until a considerable portion of the roll has been used and the weight materially lightened, and it may then be raised to an elevated position while the material is being fed from the roll and a new roll brought into position, and raised clear of the floor ready for immediate use when the first roll is exhausted. Speed reducing gearing is employed for operating the elevators or endless conveyers so that one man may very easily operate the mechanism to raise a very heavy roll.

More specifically the particular machine illustrated in the accompanying drawings includes a pair of end frames 10, rigidly connected by a base or transverse frame member 11, so positioned that it does not interfere with the rolling or wheeling of a roll of paper into position ready to be elevated. Each frame member 10 has a laterally extending or offset flange 12 rigid or integral therewith and carrying a conveyer support and guide. This conveyer support and guide is shown as a frame member 13 substantially H or X-shaped in cross section as shown particularly in Fig. 3 and extending in an upwardly and inclined position as shown in Fig. 1. The web portion is cut away or omitted at the ends to receive sprocket wheels 14 supported on upper and lower parallel shafts 15 and 16. The frame member 13 presents a pair of spaced endless guide surfaces 17 substantially parallel on

opposite sides of the plane of the sprocket wheels, and each including curved portions substantially co-axial with the sprocket wheels and longitudinally extending portions tangential to the curved portions. The frame member has oppositely disposed grooves or channels 18 extending from one sprocket wheel to the other and adapted to receive a chain 19 of any ordinary type adapted to engage with the sprocket wheels. The frame member also has oppositely disposed grooves or channels on opposite sides of the plane of the sprocket wheels which are conveniently formed by providing the frame member 13 with oppositely disposed outwardly extending flanges 20, the outer surfaces of which constitute extensions of the endless guide surfaces 17.

Separate shafts 15 are provided for the lower sprocket wheels at the two ends of the machine, while at the upper end the shaft 16 preferably extends all the way across from one frame member 13 to the other so that by the rotation of this shaft 16, the two pairs of sprockets and their chains may be operated simultaneously. For conveniently and easily rotating this shaft irrespective of the load which may be carried by the chains or conveyers 19, I provide suitable speed reducing gearing. This is shown as including a large gear 21, meshing with a pinion 22, on a stub shaft 23 mounted in a bracket 24 on one end frame 10. This stub shaft also carries a large gear 25 meshing with a pinion 26 on a second and lower stub shaft 27 which may also be mounted in the same bracket 24. This shaft is connected to any suitable source of power, as for instance, a hand crank 28, and means are provided for preventing the reverse rotation of the gears and conveyers. Such means is illustrated as a pawl 29 engaging with the pinion 26 and having a weighted end 30, normally holding it in operative engagement with the teeth of the pinion. The speed reducing gearing permits one man to conveniently turn the crank 28 and lift a roll weighing many hundreds of pounds.

For detachably connecting the chain to the roll supporting shaft, each chain has one or more, preferably 3 brackets 31 secured to the links thereof. Each bracket has a base portion 32 for engaging with the guiding surfaces 17 upon opposite sides of the chain. The connection between the bracket and the link is preferably adjacent to one end of this base so that the bracket will be pulled up along the inclined guide. The bracket is wider than the frame member 13 and has depending flanges on its sides carrying inwardly extending lugs 33, engaging beneath the flanges 20 to hold the bracket in proper guiding relationship during its downward as well as its upward course. These lugs are preferably removable and are held in place

by any suitable means, as for instance, by set screws so that the bracket may be readily taken off or replaced. The bracket has an open-sided or hook-shaped recess 34 adapted to receive the roll supporting shaft 35 and to pick up the shaft when the roll is brought into proper position in respect to the machine and the chain is operated to swing the bracket beneath the lower sprocket and to the position shown at the lower right-hand corner of Fig. 1. One end of the shaft preferably has a rack bar portion 36 formed of annular grooves, separating the circular rack bar teeth, and the bracket carries a pinion 37 meshing with this rack bar portion. As the shaft comes into the socket or recess 34, the rack bar portion automatically comes into engagement with the pinion 37. This pinion is shown as mounted on a small stub shaft 38, having a handle 39, whereby it may be rotated to move the shaft endwise in either direction to the desired extent.

To prevent the free rotation of the roll carrying shaft 35, said shaft preferably has a friction drum 40 keyed thereto, and encircling this drum are a pair of friction clamping jaws 41 and 42 pivotally connected by a pin 43. Either the exterior of the drum or the interior of the jaws or brake-shoes 41 and 42 have suitable friction inserts, these being shown as 43 in the jaws or brake-shoes 41, and 42. The free ends of the brake-shoes opposite to the pivot pin 43 are provided with suitable means for drawing them together and clamping the brake-drum 40 to provide the desired frictional resistance. This is shown as a screw bolt 44 pivoted to the brake-shoe 41 and extending through a slot in the brake-shoe 42 and having a tightening nut 45.

To prevent free rotation of the brake-shoes with the brake-drum and at the same time to permit of a free axial adjustment of the shaft and the brake drum, which is rigidly secured to the latter, a non-rotatable but axially slidable connection is effected between one of the brake-shoes and the bracket 31. This is shown in the form of a lug or projecting arm 46 carried by the bracket substantially parallel to the roll supporting shaft 35 and in the path of a lug 47 on one of the brake-shoes. This engagement of the lug 47 with the arm or projection 46 prevents the rotation of the brake-shoes but does not interfere with the axial adjustment of the shaft 35 by means of the pinion 37 as the lug 47 may slide along the projection 46.

Any suitable means may be employed for locking the roll on the shaft and holding the two concentric. I have shown the shaft as provided with a pair of tapered or conical collars 48 which may be driven lengthwise of the shaft 35 toward each other and into the ends of the roll of paper, and when

forced to the limiting position, they may be held by a set screw 49, or any other suitable locking means.

To prevent the roll supporting shaft with its friction means from dropping out of the sockets or recesses 34 when the brackets 31 pass over the upper sprocket wheels, I provide means for catching and retaining the shaft. This means is shown as a pair of hangers 50 between the two end frames and in the path of the shaft 35. Each hanger has an inclined downwardly extending upper surface beginning at a point substantially directly above the upper shaft 16 and terminating in a hook-end 51 which receives and retains the shaft as the latter rolls down the incline. A simple and efficient means for supporting these hangers and permitting of their ready removal and adjustment toward and from each other, is to hook them over the shaft 16 and lock them against rotation with the shaft. As shown, each hanger 50 has a downwardly facing recess or socket 52 receiving the shaft 16 and a lower laterally facing socket 53 receiving a stop 54 rigid with the frame of the machine. This stop is shown in the form of a rod extending transversely of the machine, parallel to the shaft 16, and somewhat below the latter. The hangers may be hooked over the shaft 16 and their own weight will swing their outer ends downwardly and bring the sockets 53 in their lower inner ends into engagement with the stop 54. To hold the hangers against any axial movement along the shaft and to insure the proper positioning of them, suitable collars 55 may be secured to the shaft 16 upon each side of each hanger and similar collars 56 on the stop rod 54 at each side of the lower end of the hanger. These may be secured in place in any suitable manner, as for instance, by set screws and permit the free rotation of the shaft 16 during the raising of a roll without disturbing the position of the hangers.

From the foregoing description of the construction, it is thought that the operation of the machine will be readily apparent, although this operation may be briefly described as follows. The operator first extends the shaft 35 through the roll of paper and drives in the conical wedges 48 so as to hold the two rigid in respect to each other. The roll is then brought to the proper position in respect to the apparatus either by rolling it along the floor or by conveying it on a truck until the shaft comes to approximately the position indicated at the lower right-hand side of Fig. 1. The crank 28 is then operated to bring the hook-shaped bracket 31 beneath the lower sprocket and upwardly into engagement with the shaft 35. If desired, the bracket may be first brought to the position shown at the lower part of Fig. 1, and the shaft lifted the

slight distance required to bring it over into the recesses or sockets 34. The crank 28 is then further rotated to lift the roll clear of the floor or truck and the roll is then adjusted endwise to bring it into proper alignment with the machine to which the paper is to be fed. This is done by turning the pinion 37 by means of the handle 39. While this new roll is being brought into position and adjusted, the machine may continue operating, and taking paper from the roll on the shaft in a more elevated position, as for instance, as shown at the upper right-hand side of Fig. 1. When the upper roll is exhausted, it is merely necessary to connect the last end of the paper to the beginning end of the paper on the lower roll, and very little interruption in the machine is necessary to accomplish this result. The roll of paper may be continuously fed from the roll in its lower position until it is nearly used up or it may be raised at any time by turning the crank 28. It should be raised before it is entirely exhausted so that a new roll may be brought into operative position on the next pair of brackets on the chain. I have shown the chain provided with three brackets so that there may be two on the operative or delivery side of the conveyer and the bringing of a bracket into position at the lower end will take place before the next preceding bracket passes over the upper sprocket. As each bracket passes over the upper sprocket, the shaft 35 will roll out of the socket or recess 34 and down the inclined surface 50 of the hanger and be retained by the hooks 51 until the operator removes it therefrom and attaches it to the next roll of paper. While the material is being delivered from the roll, the roll and its shaft may be adjusted endwise in either direction and to any desired extent to maintain the proper alinement of the roll with the machine to which it is delivering. Rolls are often dished at one end and frequent endwise adjustment of the roll is necessary to keep the paper in proper alinement. This may be very easily and conveniently done any time by the rotation of the pinion 37. As previously pointed out, such endwise adjustment does not affect the proper action of the tensioning means which is carried solely by the shaft but which automatically comes into operative engagement with the arm 46 when the shaft is picked up by the bracket 31. This tension may be increased or decreased at will during the delivery of the paper and the tensioning means automatically disengages itself from the stop or arm 46 when the shaft leaves the bracket and rolls out on the hanger 50.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A delivery stand for rolled material, including a roll supporting shaft, a pair of

endless conveyers having bearings for receiving and supporting opposite end portions of said shaft, means for operating said conveyers to raise said shaft, and means for
5 adjusting said shaft axially in respect to said bearings.

2. A delivery stand for rolled material, including a pair of endless conveyers each having a bracket presenting an open-sided
10 shaft receiving bearing, a roll supporting shaft adapted to be supported in said bearing, and having a rack bar portion and a pinion carried by one of said brackets for engaging with said rack bar portion to move
15 the shaft axially in its bearings.

3. A delivery stand for rolled material, including a pair of endless chains, each having a bracket, a shaft having its end portions supported in said brackets, a pinion carried
20 by the bracket of one chain, and engaging with the shaft to adjust the latter axially in its bearings to maintain the proper alinement of the roll.

4. A delivery stand for rolled material, including a roll supporting shaft, a pair of endless conveyers, having hook-shaped brackets for engaging with the shaft to lift and support the latter, a friction member
30 secured to said shaft, and a second friction member carried by said shaft and engaging with said first mentioned friction member and with said bracket to prevent rotation of said second mentioned friction member when said shaft is supported in said
35 brackets.

5. A delivery stand for rolled material, including a roll supporting shaft, a pair of endless conveyers, having hook-shaped brackets for receiving and elevating the
40 shaft, a friction member secured to said shaft, and a second friction member carried by said shaft and engaging with said first mentioned friction member and with said bracket to prevent rotation of said second
45 mentioned friction member when said shaft is supported in said brackets, said second friction member being detachable from said bracket with said shaft independently of the engagement of the friction members
50 with each other.

6. A delivery stand for rolled material, including a roll supporting shaft, a pair of elevators presenting brackets having shaft bearings, a pair of friction members, one
55 secured to said shaft and the other adapted to be held against rotation by engagement with said bracket, said friction members being supported solely by said shaft and being removable from said bracket with said
60 shaft.

7. A delivery stand for rolled material, including a roll supporting shaft, a pair of elevating members having means for engaging with opposite end portions of said
65 shaft to lift the roll, means for engaging

with said shaft for adjusting the latter axially in respect to said elevating members, and a pair of friction members carried by said shaft and adjustable axially with the latter, one of said members being
70 held against rotation in respect to said elevating members.

8. A delivery stand for rolled material, including a roll supporting shaft, a pair of endless conveyers having means for engaging
75 with opposite end portions of said shaft to lift the roll, means engaging with said shaft for adjusting the latter axially when in raised position, and friction means for resisting but preventing the rotation of said
80 shaft in respect to its supports.

9. A delivery stand for rolled material, including a shaft for supporting the roll, and having a rack bar portion at one end, a pair of conveyers having carriers adapted
85 to receive the opposite end portions of said shaft, a pinion mounted on one of said carriers, and adapted to engage with said rack bar portion as the shaft is picked up by the carriers.
90

10. A delivery stand for rolled material, including a pair of inclined guides, endless conveyers having lifting portions extending substantially parallel to said guides, means
95 for operating said conveyers simultaneously, a roll supporting shaft carried by but detachable from said conveyers, and means disposed between said guides for receiving said last mentioned shaft as the latter is detached from said conveyers.
100

11. A delivery stand for rolled material, including a pair of end frames, a shaft having its opposite ends mounted in said frames at the upper end of the latter, a pair of endless chains operated by said shaft and having
105 hook-shaped brackets for receiving and lifting a roll supporting shaft, and means supported by said first mentioned shaft intermediate of said frame members for receiving said second mentioned shaft as said
110 brackets pass over said first mentioned shaft.

12. A delivery stand for rolled material, including a pair of end frames, a pair of guides on said end frames, a pair of endless
115 conveyers extending along said guides, roll lifting brackets secured to said conveyers and movable upwardly along said guides, and a pair of members intermediate of said end frames for receiving the roll supporting
120 shaft as said brackets pass over the high point in their path of movement.

13. A delivery stand for rolled material, including a pair of end frames, a shaft at the upper end thereof and having its opposite
125 ends mounted in said frame members, a pair of sprocket wheels on said shaft, a pair of guides on said end frames, a pair of endless chains extending along said guides and engaging with said sprocket wheels, roll
130

lifting brackets secured to said chains and movable upwardly along said guides, and a pair of hangers supported by but detachable from said shaft.

5 14. A delivery stand for rolled material, having end frames, a shaft journaled therein, conveyers adjacent to said end frames and operated by said shaft, a roll delivery shaft adapted to be raised by said conveyers, 10 and a pair of hangers having inclined portions down which said second mentioned shaft may roll and upwardly extending portions at the lower ends of the inclined portions for receiving and retaining said first 15 mentioned shaft.

15 15. A delivery stand for rolled material, including a pair of endless conveyers, a shaft at the upper end thereof for operating them simultaneously, a frame member disposed 20 substantially parallel to said shaft, and a pair of members for receiving the roll support, each of said members being detachably supported by said shaft and said frame members.

25 16. A delivery stand for rolled material, including a pair of endless conveyers, a shaft at the upper end thereof for operating them simultaneously, a frame member disposed 30 substantially parallel to said shaft, and a pair of members for receiving the roll support, each of said pairs of members being supported by said shaft and said frame members and adjustable toward and from 35 each other.

40 17. A delivery stand for rolled material, including a pair of endless conveyers, a shaft at the upper end thereof for operating them simultaneously, a frame member disposed 45 substantially parallel to said shaft, a pair of members for receiving the roll support, each of said last mentioned members being supported by said shaft and said frame member, and having downwardly facing recesses receiving said shaft and laterally facing 50 recesses receiving said frame member.

55 18. A delivery stand for rolled material, including a pair of lifting brackets having open-sided shaft receiving recesses, a pinion carried by one of said brackets, a stop carried by one of said brackets, a roll supporting shaft adapted to be received within said recesses and having a portion for engagement with said pinion, and having a pair of 60 relatively rotatable friction members, one adapted to engage with said stop as said shaft enters said recess.

65 19. A delivery stand for rolled material, including a pair of lifting brackets having open-sided shaft receiving recesses, a pinion carried by one of said brackets, a stop carried by one of said brackets, a roll supporting shaft adapted to be received within said recesses and having a portion for engagement with said pinion, and having a pair of 65 relatively rotatable friction members, one

adapted to engage with said stop as said shaft enters said recess, and means for receiving said shaft and its friction members and delivering the same out of the path of the brackets when said brackets reach a pre- 70 determined point in their course.

20. A delivery stand for rolled material, including a plurality of roll supporting shafts, each having roll centering and roll 75 tensioning means, and a pair of conveyers for engaging with said shafts in succession and raising them in spaced relationship and automatically engaging with said tensioning means to render the latter effective while the shaft is in engagement with the conveyers. 80

21. A delivery stand for rolled material, including a plurality of roll supporting shafts, each having a rack bar portion, and a pair of conveyers for engaging with said shafts in succession and lifting them in 85 spaced relationship, and having means for engaging with said rack bar portions to permit of the independent axial adjustment of the shafts while being raised.

22. A delivery stand for rolled material, 90 including a pair of brackets each presenting an open-sided shaft receiving bearing, a roll supporting shaft detachably supported in said bearings, and having a rack bar portion and a pinion carried by one of said 95 brackets for engaging with said rack bar portion to move the shaft axially in its bearings.

23. A delivery stand for rolled material, including a roll supporting shaft, a pair of 100 brackets for detachably engaging with and supporting the opposite end portions of said shaft, and friction means carried by said shaft and detachably engaging with said bracket for resisting but permitting the 105 rotation of said shaft.

24. A delivery stand for rolled material, including a roll supporting shaft, a pair of brackets presenting open-topped bearing 110 recesses for said shaft, a friction drum carried by said shaft and brake-shoes engaging with and carried by said drum and detachably engaging with one of said brackets to prevent rotation of said brake-shoes with 115 said drum.

25. A delivery stand for rolled material, including a roll supporting shaft, a pair of hook-shaped brackets for receiving and supporting the shaft, a friction member secured to said shaft and held against relative rotation in respect thereto, and a second friction member carried by said shaft and engaging with said first mentioned friction member and detachably engaging with one of said brackets to prevent rotation of said 120 second mentioned friction member with said shaft and first mentioned friction member when the shaft is supported in said brackets.

26. A delivery stand for rolled material 130

including a roll supporting shaft, a pair of brackets having shaft bearings, a pair of friction members, one of said friction members being secured to said shaft and the
 5 other adapted to be held against rotation when said shaft is supported by said brackets, said friction members being supported solely by said shaft, and removable from said brackets with said shaft.

10 27. A delivery stand for rolled materials including a pair of inclined guides, a pair of endless sprocket chains having their upper runs substantially parallel to said guides, a roll supporting shaft, a pair of
 15 hook shaped brackets secured to said chains and adapted to engage with said shaft to pick up the latter as said brackets pass around the low point of their course and means for receiving said shaft as said brackets
 20 pass over the high point of their course.

28. A delivery stand for rolled material including a pair of end frames, two pairs of sprocket wheels, one sprocket wheel of each pair being disposed adjacent to the lower
 25 end of each frame and one adjacent to the upper end of each frame, a pair of endless chains carried by said pair of sprocket wheels, a roll supporting shaft, means on said chains for engaging with the opposite

end portions of said shaft to pick up the
 3 latter as said means pass around the lower sprocket wheels and means to receive said shaft as said first mentioned means pass over the upper sprocket wheels.

29. A delivery stand for rolled material
 35 including a pair of end frames, a shaft connecting said frames at their upper ends, a pair of sprocket wheels on said shaft, separate and independent sprocket wheels on said frames adjacent to the lower ends of
 40 the latter, separate endless chains mounted on said sprockets, one adjacent to each end frame, a plurality of pairs of brackets secured to said chains, adapted to engage with, lift a roll supporting shaft disposed
 45 between the lower ends of said end frame as said brackets pass around the lower sprocket wheels and a crank mounted on one of said frames and multiplying gearing connecting said crank and the first shaft
 50 whereby a heavy roll of material may be lifted from its support and held at the desired elevation of said handle crank.

Signed at Camden in the county of Camden and State of New Jersey this 22nd day
 55 of May A. D. 1919.

SAMUEL M. LANGSTON.