

May 23, 1967

M. D. MARTIN
PICK-UP ROLL STAND

3,321,147

Filed Aug. 24, 1965

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Fig. 1.

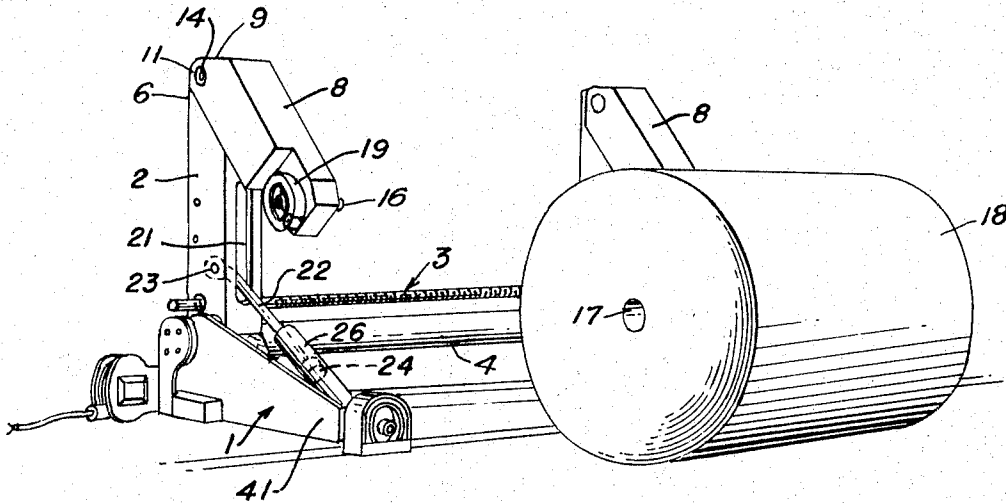
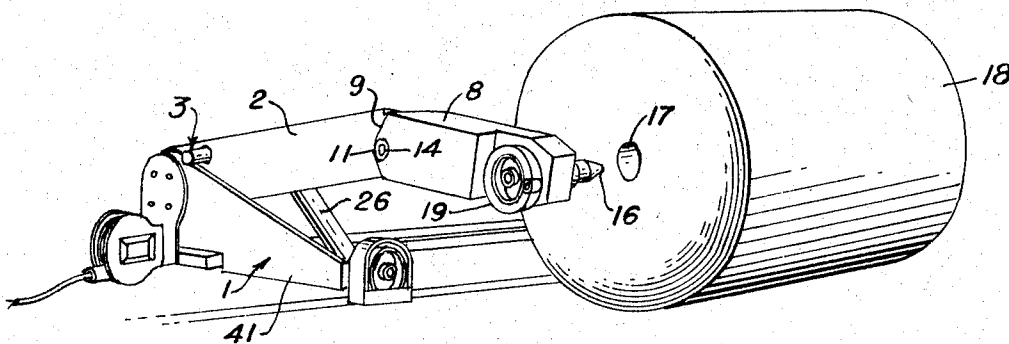


Fig. 2.



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Fig. 3.

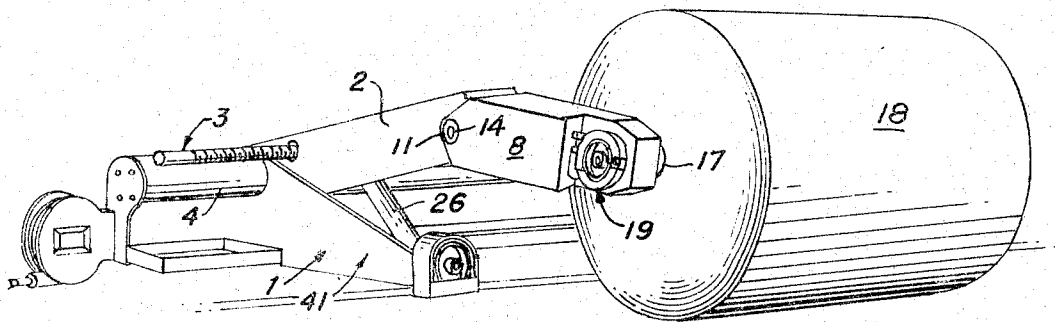
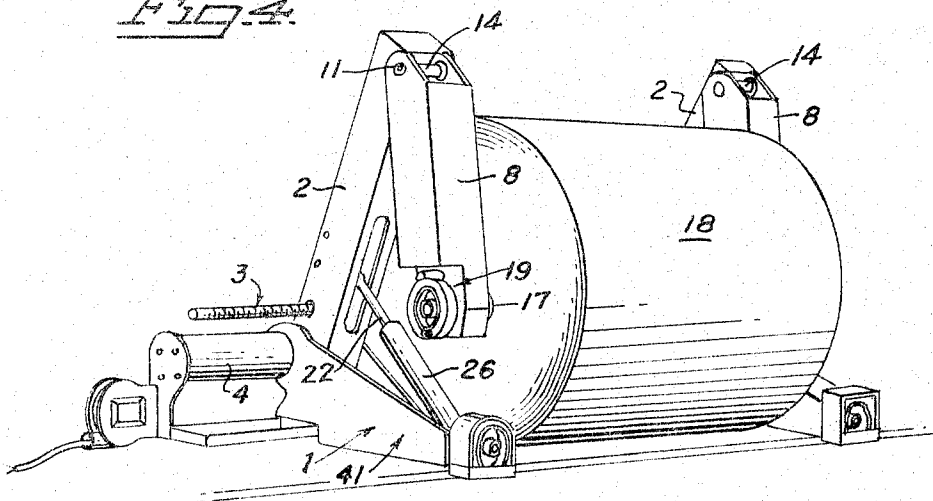


Fig. 4.



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Fig. 5.

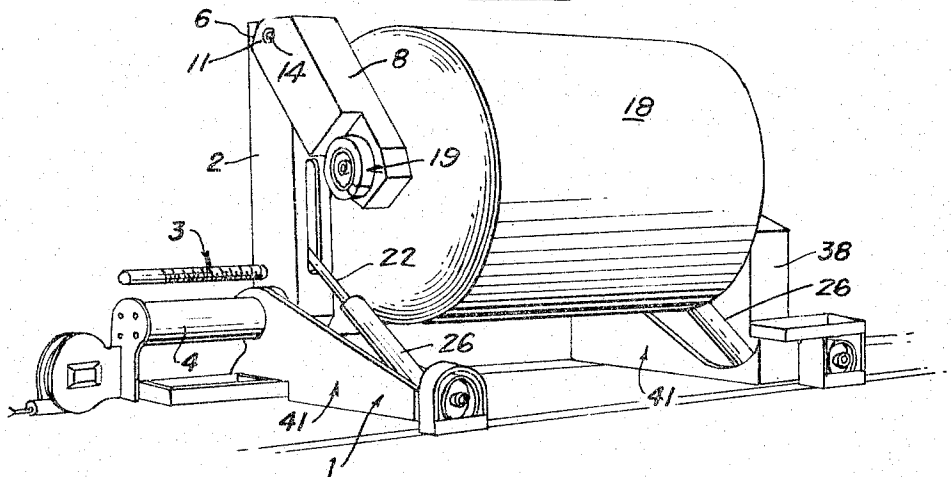
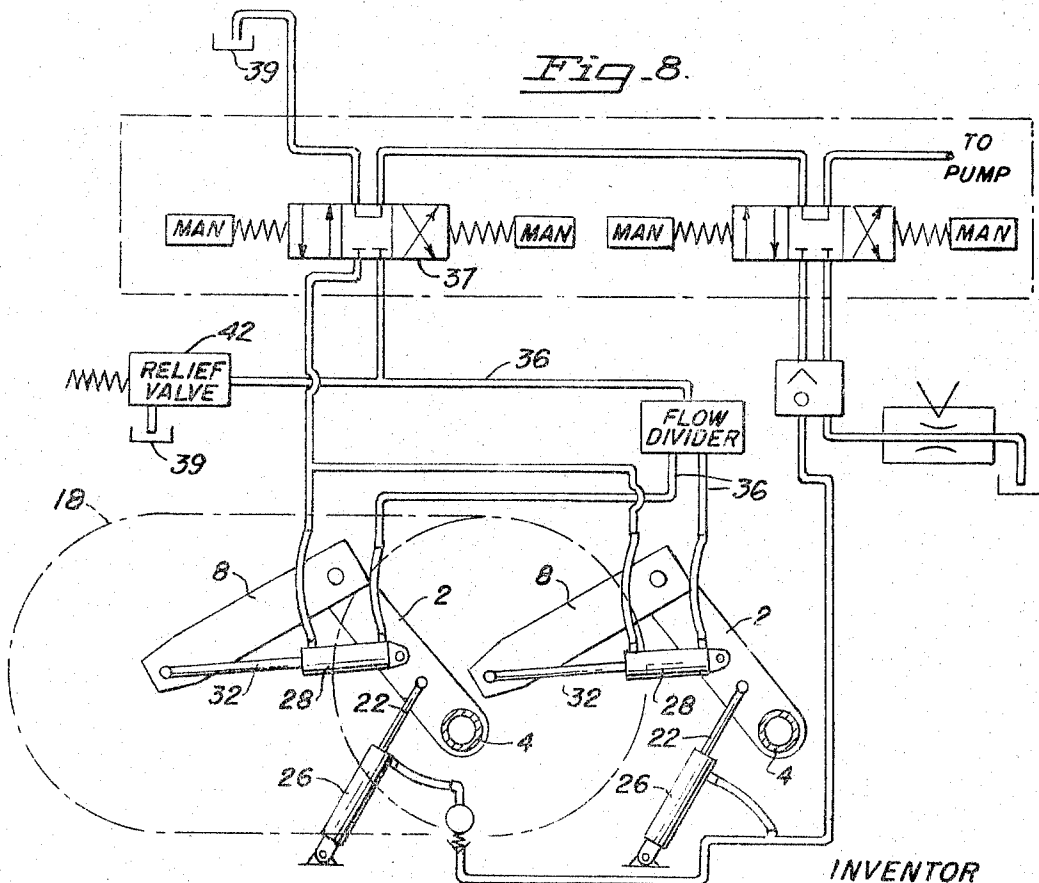


Fig. 8.



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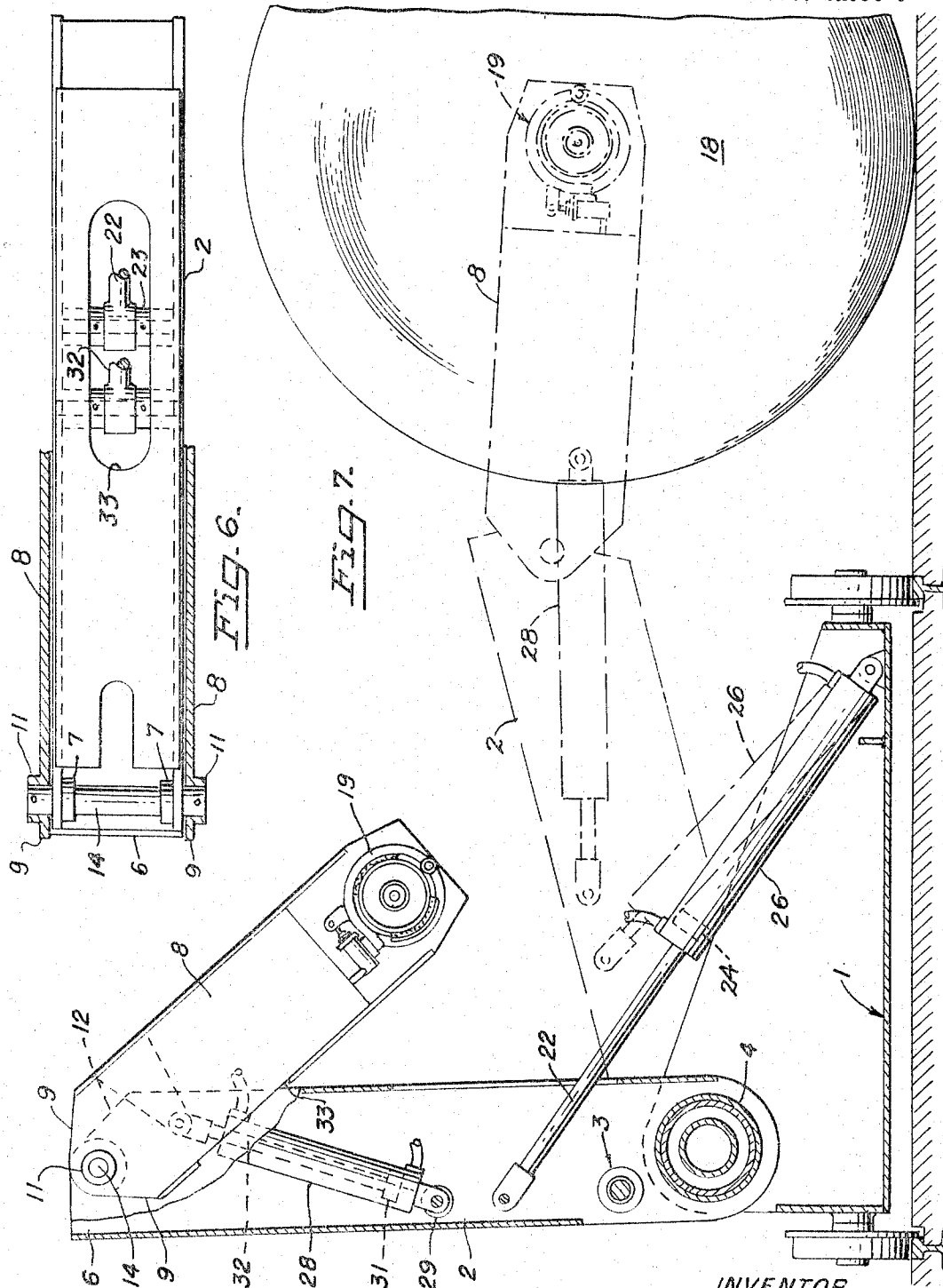
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3,321,147

PICK-UP ROLL STAND

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Filed Aug. 24, 1965, Ser. No. 482,121

4 Claims. (Cl. 242-58.6)

This invention relates to a pick-up roll stand.

The primary object of this invention is to provide a device on a roll stand for reaching out beyond the borders of the roll stand and for pulling a web roll within the border of the roll stand base and to raise the roll into position for unwinding; means being provided to prevent the extension device for lifting a roll in excess of the safe weight for the balance of the roll stand thereby to prevent tipping of the roll stand.

I am aware that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following specification, and as defined in the following claims; hence I do not limit my invention to the exact arrangements and combinations of the said device and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

With the foregoing and other objects in view, which will be made manifest in the following detailed description, reference is had to the accompanying drawings for the illustrative embodiment of the invention, wherein:

FIG. 1 is a perspective view of a roll stand showing the extension arms folded.

FIG. 2 is a perspective view of the roll stand with the extension arms extended reaching for a web roll.

FIG. 3 is a perspective view of the roll stand with the extension arms engaged with the spool of a web roll for pulling the web roll into the stand.

FIG. 4 is a perspective view of the roll stand showing the roll pulled into the roll stand.

FIG. 5 is a perspective view of the roll stand showing the web roll lifted into unwinding position.

FIG. 6 is a partly sectional view showing the joining of the extension arm to the lifting arm on the roll stand.

FIG. 7 is a partly sectional view showing the arm of the roll stand in upright position with the extension arm folded, the extended position of the extension arm being shown in broken line engaged with a web roll.

FIG. 8 is a conduit diagram showing the hydraulic control of the extension arm.

In the herein embodiment, the invention is shown on a roll stand of the type described in co-pending application of Merrill D. Martin, filed Jan. 23, 1964, Ser. No. 339,623, for Unwind Stand For Web Rolls, and the particular improvements herein pertain to the means to reach out for the roll to pull the roll into the roll stand and then to lift the roll into position for unwinding, and to render the operation safe against tilting or toppling of the stand.

As shown and described in my said co-pending application, the unwind stand includes in general a carriage 1 on which are pivoted spaced loading arms 2, movable relatively to one another and adjustable longitudinally of the carriage 1 by an adjusting mechanism 3.

The raising and lowering of the loading arms 2, the operation of the longitudinal adjusting mechanism 3, and other operations of the unwind stand are controlled by a hydraulic mechanism shown in said application, and also diagrammatically in FIG. 7.

The improvements of the present invention pertain primarily to the loading arms 2. Each loading arm 2 is formed in firmly welded box structure and is suitably mounted on a tubular shaft 4 suitably journaled on the carriage 1.

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In the outer or free end 6 of each loading arm 2 are provided a pair of inwardly extended opposite bearing bosses 7 spaced from one another. An extension or folding arm 8 is pivoted to the outer end 6 of each loading arm.

Each extension arm 8 is a firmly welded box structure. The pivoted end of each extension arm 8 is formed with tapering ears 9 having outwardly projecting bearing bosses 11 registering with the bearing bosses 7 of the loading arm 2. The inner corners of the sides of the outer end 6 of each loading arm 2 are cut away to form inclined edges 12 which permit the folding of the extension arms 8 inwardly. A pivot shaft 14 extending through the registering bearing bosses 7 and 11 forms the fulcrum for each extension arm 8.

In the outer end of each extension arm 8 is mounted a spindle chuck 16 for entering into the opposite ends of the spool 17 of a web roll 18 thereby to rotatably clamp the web roll 18. A tension device or brake device 19 is provided for each spindle chuck 16 operating in the manner described in my said co-pending application.

Each loading arm 2 has a slot 21 along its underside. A piston rod 22 is pivoted in journals 23 in each loading arm 2 and extends through said slot 21. A piston 24 on the piston rod 22 works in a hydraulic cylinder 26, which latter is suitably pivoted on the carriage 1 so as to be swingable for compensating for the change of angular attitude of the loading arm 2 as the piston 24 is reciprocated for raising or lowering said loading arm 2.

An extension cylinder 28 is journaled on journals 29 in the loading arm 2 adjacent the journal of said piston rod 22. A piston 31 works in each extension cylinder 28. A piston rod 32 of each piston 31 extends through the slot 21 in the underside of each load arm and extends through a slot 33 in the underside of the extension arm 8. The end of each piston rod 32 is journaled within the adjacent extension arm 8 near the pivot shaft 14.

The hydraulic controls for the cylinders 26 for turning the loading arms 2 are as described in my said co-pending application.

The hydraulic controls for the extension cylinders 28 include the conduits 36 which lead to a manual valve 37, which latter is connected to a supply of fluid under pressure. The manual valve 37 is located at the control board 38 of the carrier and is also connected to the reservoir 39 for by-passing fluid from the extension cylinders 28 for folding the extension arms 8.

The loading arms 2 are of a length to be within the area of the base 41 of the carrier 1. When the extension arms 8 are folded as shown in FIG. 1, the spindle chucks of the extension arms 8 are also located within the area of the base and thus prevent tilting or toppling of the carrier. However, instead of manually rolling the web roll into the web roll stand as in my previous application, the extension arms 8 are extended to reach to the web roll and are clamped on the roll. Then as the loading arms 2 are raised the extension arms 8 are folded as shown in FIGS. 3 and 4, thus rolling the web roll into the stand. After the web roll is rolled into the stand so as to be located within the area of the carrier base 41, then, as the loading arms 2 are raised higher and the extension arms 8 being completely folded or collapsed, they move up with the outer ends of the loading arms 2 and lift the web roll into unwinding position.

Tilting or toppling of the carrier 1 is further prevented by a relief valve 42 interposed in the conduit 36. These relief valves 42 are so adjusted as to limit the pressure in the extension cylinders 28 below the pressure necessary to exert the force to lift a full web roll at the leverage of the extended position of the extension arms 8. Thus, if by mistake the operator endeavors to raise the loading arms 2 while the extension arms 8 are extended and en-

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gaged with a full web roll, the load on the extended extension arms 8 will overcome and open the regulator relief valve 42 so as to by-pass the liquid under pressure and cause the folding of the extension arms under the excessive load. In this manner the maximum load on the extension cylinders 28 and on the extension arms 8 is predetermined and the lifting of the web roll while the extension arms are extended is prevented. Such lifting can be accomplished only after the web roll has been rolled within the area of the stand or base. In this manner the tipping of the stand is prevented.

I claim:

1. In a web roll stand,

- (a) a generally U-shaped stand adapted to receive a web roll within the area defined by the stand,
- (b) a pair of spaced loading arms,
- (c) means to pivotally and adjustably support said loading arms,
- (d) means to raise and lower said loading arms about a common fulcrum,
- (e) means to adjust the spacing between said folding arms to accommodate a web roll,
- (f) hydraulic control means for said raising and lowering and for said adjustment;

the improvements of:

- (g) an extension arm pivoted on the end of each loading arm,
- (h) power means connecting each loading arm to its extension arm for turning said extension arm into extended position and for folding said extension arm,
- (i) engagement chucks on the extension arms for engaging the core of the web roll,
- (j) means to control said power means for folding said extension arms thereby to roll a web roll engaged by said chucks into the area defined by said stand as the extension arms are folded and thereafter for lifting said web roll by the raising of said loading arms with the extension arms in folded attitude.

2. The invention defined in claim 1 and

- (k) means to permit the weight of the web roll to fold said extension arms when a force in excess of a predetermined force is exerted on said extension arms thereby to prevent the lifting of said web roll until after the extension arms are in said folded attitude.

3. In a web roll stand,

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- (a) a carriage having a pair of base members spaced from one another,
- (b) means to connect the base members to one another for adjustable spacing so as to provide space between the base members for a web roll,
- (c) a loading arm at each base member,
- (d) means to fulcrum said loading arms,
- (e) power means to raise and lower said loading arms about said fulcrum means for engaging and raising the web roll;

the improvements of

- (f) an extension arm fulcrumed on each loading arm so as to be movable to a position in extension of the loading arms for engagement with a web roll beyond the space between said base members,
- (g) power means to extend and fold said extension arms relatively to the respective loading arms,
- (h) means on the ends of the extension arms for engagement with the core of a web roll for rolling the web roll as the loading arms are lifted and the extension arms are folded simultaneously thereby to locate the web roll in said space between said base members, and for lifting and holding said web roll in unwinding position upon further raising of the loading arms with the extension arms in folded position.

4. The invention defined in claim 3 and

- (i) control means for supplying power to said means for raising said loading arms and to said means for folding and extending said extension arms,
- (j) preset means for rendering said power means of said extension arms inoperative for lifting at a predetermined load thereon thereby to prevent the lifting of the web roll while said extension arms are in extended attitude and while said web roll is outside of said space between said base members.

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