Jan. 18, 1955 R. L. HAEHN ET AL 2,699,880

ROLL GRAB FOR LIFT TRUCKS

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Fig. 1

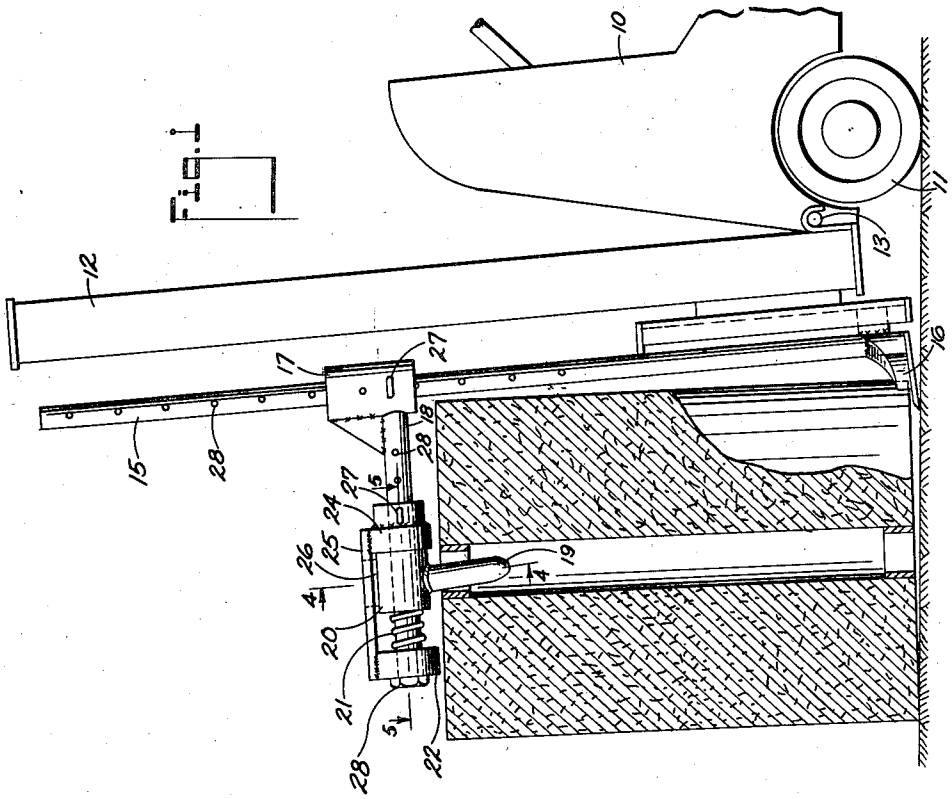
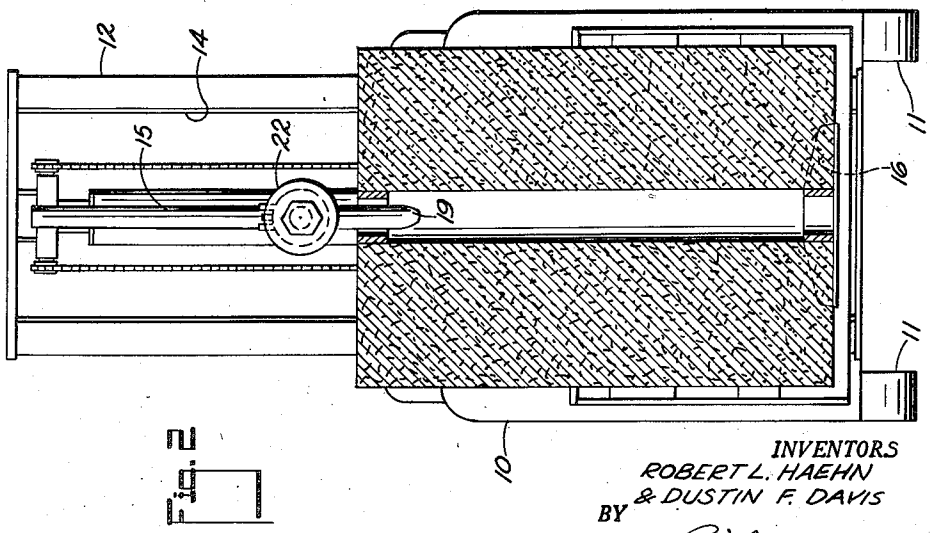


Fig. 2



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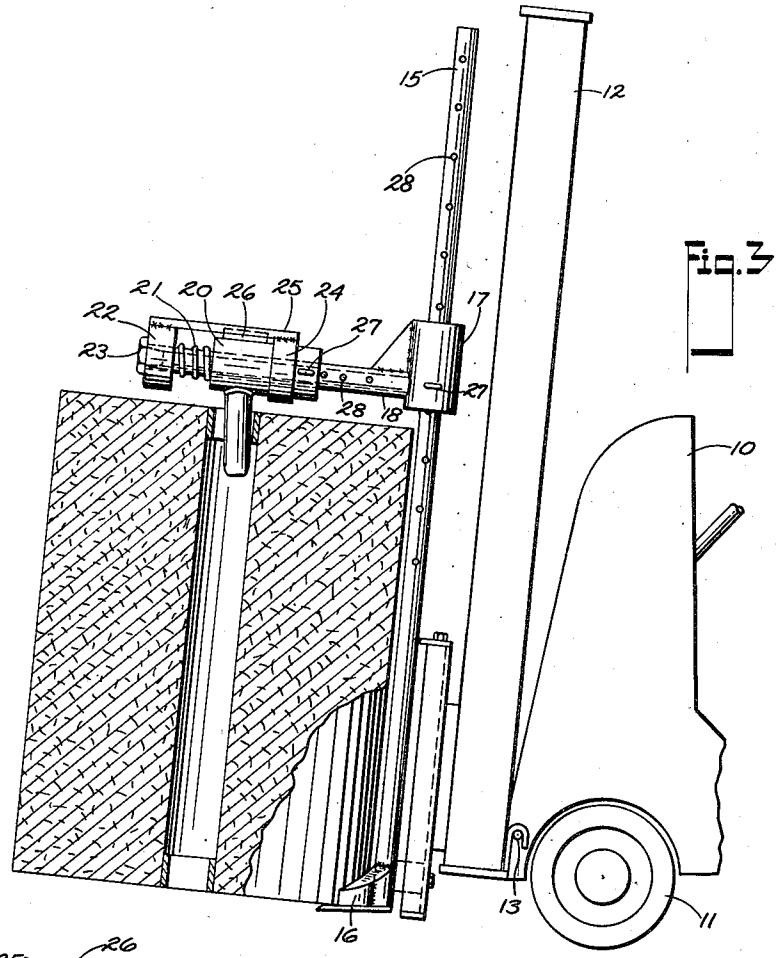


Fig. 3

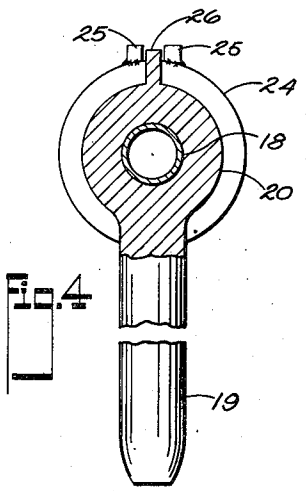


Fig. 4

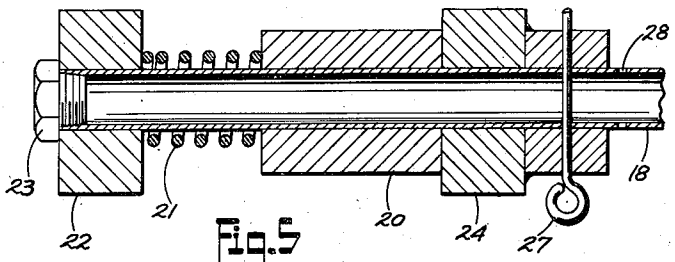


Fig. 5

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ROLL GRAB FOR LIFT TRUCKS

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Application October 11, 1950, Serial No. 189,513

5 Claims. (Cl. 214—654)

This invention relates broadly to lift trucks and more specifically to improvements in mechanism for handling newsprint rolls.

The majority of lift trucks in current use embody a mast mounted on the truck for limited tilting movement fore and aft, a slide mounted on the mast for reciprocative movement relative thereto, and a work-supporting carriage mounted on the slide for independent vertical movement. In the present invention the roll grab mechanism is mounted on the carriage and is manipulated by the combined movement of the mast and carriage. In detail, the grab mechanism comprises a column secured to the carriage, an arm mounted thereon in normal relation thereto, a pintle depending therefrom for engagement in the core bushing in a paper roll, and a shoe on the lower end of the column for engagement with the base of the roll. The roll grab is designed to handle paper rolls which are in a vertical position, the operative cycle, therefore, comprising moving the vehicle into a confronting relation with the roll, lowering the carriage and tilting the mast downwardly, engaging the pintle in the core bushing of the paper roll, moving the vehicle forwardly and simultaneously tilting the mast rearwardly to introduce the shoe below the base of the roll and to effect the engagement of the shoe therewith, and elevating the carriage to the requisite carrying position. Although the roll may be cradled in the sleeve by tilting the mast to its maximum rearward position of adjustment, the upper support therefor has been found inadequate when the vehicle is driven over a rough surface or brought to a sudden stop. In the present invention this difficulty is eliminated by supporting the pintle in radial spring-pressed relation with the roll and forming the pintle with a reentrant angle in order to attain maximum frictional engagement thereof with the bushing.

An object of the invention is to provide an adjustable locking mechanism for the column and arm to accommodate the use of the grab mechanism on rolls of different size.

Another object of the invention is to provide a paper roll grab mechanism which may be attached to the carriage of a lift truck or dismantled therefrom with ease and dispatch.

Further objects of the invention reside in the provision of the roll grab which is sturdy of structure, relatively light in weight, efficient of operation, and susceptible of use in the hands of an operator untutored in the use thereof.

Other objects and advantages more or less ancillary to the foregoing, and the manner in which all the various objects are realized will appear in the following description, which, considered in connection with the accompanying drawings, sets forth the preferred embodiment of the invention.

Referring to the drawings:

Fig. 1 is a side elevational view of a lift truck embodying the improved paper roll grab mechanism;

Fig. 2 is a front elevational view thereof;

Fig. 3 is a side elevational view of a lift truck similar to Fig. 1 but shown in actuated position;

Fig. 4 is a transverse sectional view thereof, the section being taken on a plane indicated by the line 4—4 in Fig. 1; and

Fig. 5 is a longitudinal sectional view taken on line 5—5 in Fig. 1.

Referring to Fig. 1, the vehicle chosen herein for the purpose of illustrating one of the environs within which

the grab mechanism may be used comprises a body **10** mounted on wheels **11**, a mast **12** mounted for pivotal movement on a fulcrum **13** adjacent the base of the mast, a slide **14** carried by the mast, and a carriage constructed for vertical reciprocative movement on the slide.

The improved roll grab embodies a column **15** having a V block and horizontally disposed shoe **16** on the lower end thereof, a sleeve **17** mounted for vertical adjustment thereon, an arm **18** affixed upon the sleeve in normal relation thereto, and a pintle **19** mounted in a collar **20** slidably engaged with the arm **18**. The collar is urged inwardly by a helical spring **21** mounted on the arm intermediate the outer face of the collar and inner face of a ring **22**. The ring may be retained upon the arm by a nut or a shouldered plug **23**, as shown, which is threaded into the end of the arm. The inner end of the collar **20** abuts a sleeve **24** mounted on the arm and united with the ring **22** by a pair of tie bars **25** preferably welded to the ring and sleeve in spaced parallel relation to each other. The upper face of the collar **20** has a key **26** welded thereon which is arranged for free sliding movement between the tie bars **25**. The sleeves **17** and **24** are cross-drilled for the reception of pins **27** engageable in openings **28** in the column and arm respectively to accommodate the use of the clamping mechanism in paper rolls of variable length and diameter.

In operation, the vehicle is brought into confronting relation with the roll, then the carriage or slide **14** is lowered into position. The mast is next inclined forwardly (as illustrated in Fig. 1) and the vehicle slightly advanced to affect the introduction of the pintle into the bushing in the roll of newsprint or other cylindrical bodies. Further forward movement of the vehicle will place the shoe **16** beneath the edge of the lower face of the roll. The mast is then tilted rearwardly and the carriage or slide elevated to cradle the roll in the V block and facilitate the transportation thereof. During the translation of the vehicle, the spring **21** will maintain a constant pressure of the pintle **19** against the bushing in the roll and thus prevent displacement thereof due to shock or vibration resulting from irregularities in the surface of the floor.

Although the foregoing description is necessarily of a detailed character, in order that the invention may be completely set forth, it is to be understood that the specific terminology is not intended to be restrictive or confining, and that various rearrangements of parts and modifications of detail may be resorted to without departing from the scope or spirit of the invention as herein claimed.

What is claimed is:

1. In a lift truck having a mast mounted for tilting movement fore and aft, a slide mounted on the mast for movement relative thereto, a roll grab mechanism comprising a column secured to said slide, an arm releasably mounted on said column and normal thereto, a pintle reciprocably mounted on said arm for engagement with the upper end of said roll, resilient means for biasing said pintle toward said column, and a shoe on the lowermost end of said column for engagement with the lower end of said roll.

2. In a lift truck having a mast mounted for tilting movement fore and aft, a slide mounted on the mast for movement relative thereto, a roll grab mechanism comprising a column secured to said slide, an arm mounted on said column, a pintle for engagement with said roll, mounting means on said arm for carrying the pintle, said pintle being reciprocable on the arm, a shoe on the lowermost end of said column for engagement with the lower end of said roll, and a resilient member on said means for biasing the pintle toward one end of its path of travel.

3. In a lift truck for rolls of news print paper having a mast mounted for tilting movement fore and aft, a slide mounted on the mast for movement relative thereto, a roll grab mechanism comprising a column secured to said slide, an arm releasably mounted on said column, a sleeve carried by said arm, a pair of spaced-apart stops rigidly mounted on said arm, said sleeve being disposed for movement therebetween, a resilient member between one of said stops and the sleeve for

biasing said sleeve toward the other stop, a pintle depending from said sleeve for engagement with the upper end of said roll, and a shoe on the lowermost end of said column for engagement with the lower end of said roll as the roll is lifted.

4. In a lift truck having a mast mounted for tilting movement fore and aft, a slide mounted on the mast for movement relative thereto, a roll grab mechanism comprising a column secured to said slide, an arm mounted on said column, a pintle reciprocally mounted on said arm for engagement with the upper end of said roll, resilient means for biasing said pintle toward said column, and support means carried by the mast for engagement with the lower end of said roll.

5. In a lift truck having a mast mounted for tilting movement fore and aft, a slide mounted on the mast for movement relative thereto, a roll grab mechanism comprising a column secured to said slide, an arm mounted on said column, a pintle reciprocally mounted on said arm for engagement with the upper end of said roll, resilient means for biasing said pintle toward said column, and support means on the lower end of said column for engagement with the lower end of said roll.

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