J. B. CORNWALL.

PACKER.

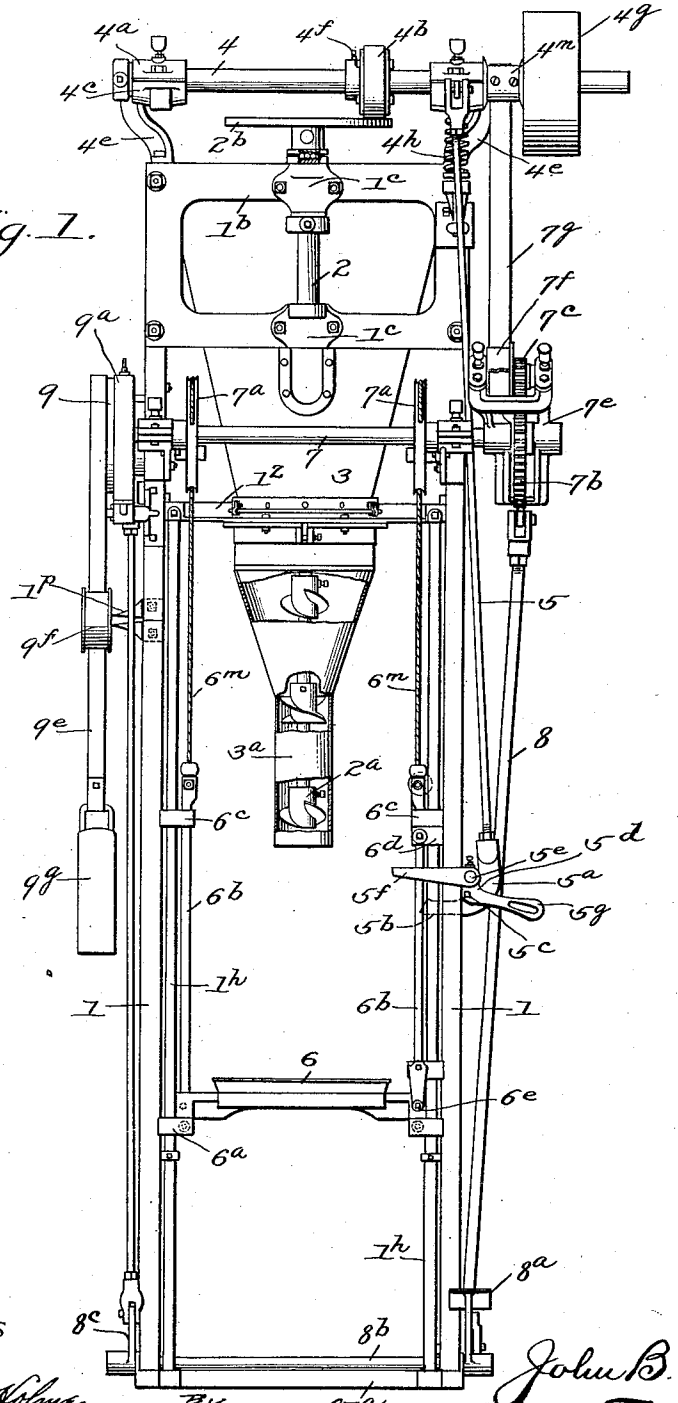
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2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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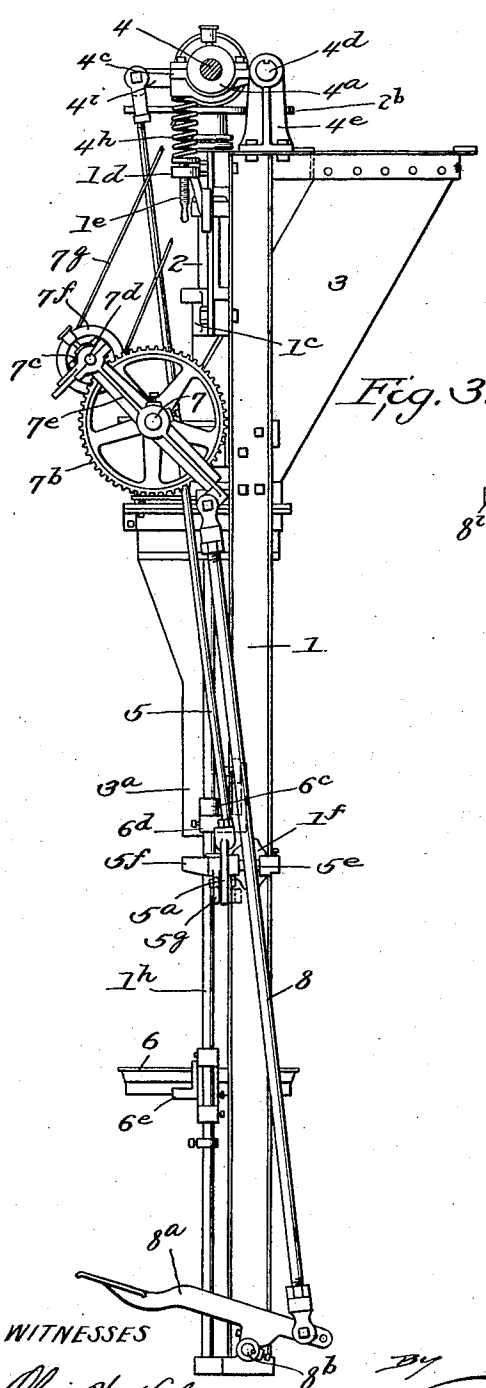


Fig. 3.

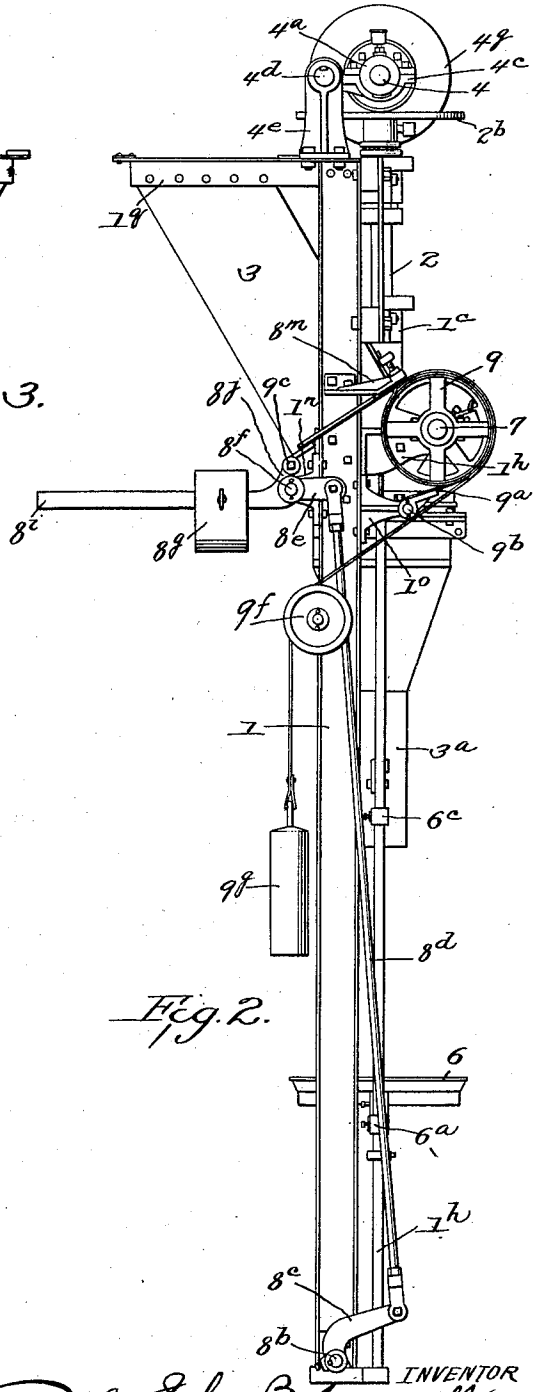


Fig. 2.

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PACKER.

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To all whom it may concern:

Be it known that I, JOHN B. CORNWALL, of Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Packers; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is a machine for packing materials such as flour and the like, in bags or sacks, and its object is to provide a machine that will be substantially automatic in its action as regards the packing, the packing operation beginning as soon as the bag is properly positioned upon the platform and around the packing tube, and the packing operation ceasing as soon as a sufficient predetermined amount has been packed into the bag or receptacle.

The invention comprises novel means for actuating the packer shaft and for controlling the operation of such shaft from the platform; also novel means for automatically starting and stopping the packer at the proper times; and novel means for automatically raising the platform and for controlling the descent thereof.

The invention further comprises novel features of construction of various parts and novel combinations of such parts all of which will be hereinafter more fully explained.

I will explain the invention in detail as embodied in the machine illustrated in the accompanying drawings, which illustrate a practical apparatus; but I do not consider the invention restricted to the specific construction of the parts illustrated in said drawings as they are susceptible of change in form and proportions while retaining the essential novel characteristics of the invention.

In said drawings: Figure 1 is a front elevation of the complete machine. Fig. 2 is an elevation of the machine, viewed from the left hand side of Fig. 1. Fig. 3 is an elevation of the machine viewed from the right hand side of Fig. 1.

As shown the machine consists of uprights 1 which may be connected at bottom by a base bar 1^a and at top by a plate or frame 1^b, which is provided with bearings 1^c for a vertically disposed packer shaft 2, on the lower end of which may be removably mounted packing screws 2^a which operate within the cylindric packing tube 3^a attached to the lower portion of the hopper 3; which hopper may be of any suitable construction, and is shown as supported by and suspended from a transverse bar or casting 1^z attached to the uprights 1 below the frame 1^b. The upper end of the hopper is inclined to the rear of frame 1^b, and is secured to brackets 1^q attached to the uprights 1. I do not herein make any claim for the hopper *per se*, nor for the packing tube and heads, *per se*. Preferably the packing tube 3^a is made removable and changeable, so that a packing tube of any desired size may be used in the machine according to the size of the package to be packed; and packing heads 2^a of different sizes, corresponding to the different sizes of packing tubes, may be provided.

On the upper end of the packer shaft 2 is fastened a friction disk 2^b which is adapted to be engaged and driven by a friction surfaced pulley 4^b on the drive shaft 4, which drive shaft is journaled in bearing 4^a mounted upon arms 4^c which are pivoted at their rear ends, as at 4^d, upon brackets 4^e attached to the upper ends of the uprights as shown in the drawings. The shaft 4 may be driven by any suitable means, preferably by belting a pulley 4^g thereon to any suitable driver. The friction pulley 4^b is preferably splined to shaft 4 and may be adjusted longitudinally upon said shaft, and secured where adjusted by a set screw 4^f. By adjusting pulley 4^b toward or from the axis of disk 2^b the speed of rotation imparted to the packer shaft 2 can be regulated.

An expansion spring 4^h is interposed between one of the arms 4^c and a bracket 1^d, on the adjacent upright 1, and normally tends to lift the arms and swing the shaft 4 and pulley 4^b upwardly, thereby separating the pulley 4^b from disk 2^b. The tension of this spring 4^h can be adjusted by means of a screw 1^e tapped through the bracket. The spring can be overcome and the shaft 4 and pulley 4^b lowered, and the latter held in operative contact with disk 2^b, by means of a rod 5 pivotally connected at its end to a projection 4^i on the arm 4^c engaged by spring 4^h; and the lower end of rod 5 is connected to a locking plate or casting 5^a, which is curved inwardly beside the adjacent upright 1, and the inner end 5^b of this locking plate

extends inwardly for a purpose hereinafter explained.

The locking plate 5^a is pivotally connected, near its bend, by a bolt 5^c to an arm 5^d on a stub shaft 5^e journaled in a bracket 1^f attached to the adjacent upright 1; and to this shaft 5^e is attached an arm 5^f which projects inwardly, beside the adjacent upright, into the path of lugs or studs 6^d, 6^e on the movable platform or sack supporter 6 hereinafter referred to.

The lever 5^d may be provided with a laterally projecting handle 5^g by which the shaft 5^e can be rocked; and by lifting arm 5^f (or depressing the handle 5^g) shaft 5^e will be rocked and rod 5 will be drawn downward so as to compress spring 4^h and bring pulley 4^b into contact with disk 2^b; and when the lever is thus depressed the pivot 5^c is moved inwardly past an imaginary line drawn between the pivot 5^c and the pivotal connection of the rod 5 to the arm 4^c, and consequently this device acts to automatically lock the pulley 4^b in contact with disk 2^b until the shaft 5^e is rocked by the depression of arm 5^f (or lifting of handle 5^g) and causes pivot 5^c to move to the outer side of shaft 5^e, which permits the spring 4^b to lift rod 5 and shaft 4 and move pulley 4^b out of contact with the disk 2^b.

Moving vertically between the uprights 1 and below the packing tube 3^a is a platform 6 which may be provided with eyes 6^a engaging vertical guide rods 1^h attached to the main frame beside the uprights 1; this platform may also be provided at its sides with standards 6^b having eyes 6^e, on their upper ends, also engaging rods 1^h, so as to keep the platform steady. On the rod 6^b at the side adjacent the shaft 5^e is adjustably secured a stud or block 6^d which is adapted to contact with the end 5^b of the plate 5^a when the carriage descends and thereby rock shaft 5^e and swing pivot 5^c to the outside of the shaft 5^e, permitting spring 4^h to lift the shaft 4 and move pulley 4^b out of contact with disk 2^b, thus stopping the operation of the packer shaft. To the same rod 6^b near the platform is secured a contact block or stud 6^e which is adapted to engage arm 5^f when the platform has been raised to the proper position and rock shaft 5^e thereby causing lever 5^d to swing pivot 5^c to the inner side of shaft 5^e, thus compressing spring 4^h, lowering shaft 4, and bringing the friction pulley 4^b into operative contact with disk 2^b; the friction pulley is thus held in frictional contact with the disk 2^b until the platform descends and the trip block 6^d engages arm 5^b and disengages the friction drive as above described.

The platform may be raised by cables 6^m preferably connected to the upper ends of the rods 6^b, and to grooved pulleys 7^a fixed on a shaft 7 journaled in brackets 1^h attached to the uprights 1 above the bar 1^z. On one end of this shaft 7 is keyed a gear 7^b which meshes with a pinion 7^c on a shaft 7^d journaled in one end of a yoke 7^e which is pivotally mounted upon the shaft 7 and embraces the gear 7^b. On shaft 7^d is a pulley 7^f which may be driven by a belt 7^g from a pulley 4^m on shaft 4 when the yoke is swung so as to tension the belt 7^g.

A rod 8 is pivotally connected to the end of the yoke opposite the pulley 7^f and the lower end of said rod is pivotally connected to a treadle lever 8^a keyed to one end of a shaft 8^b journaled in bearings at the lower ends of the uprights 1; and on the opposite end of the shaft 8^b (Fig. 2) is a crank arm 8^c, the outer end of which is pivotally connected to the lower end of a rod 8^d, the upper end of which rod is pivotally connected to a short arm 8^e of a compound lever which is pivoted at 8^f on a bracket 1^n attached to the adjacent upright 1. On the long arm 8^i of this compound lever is adjustably secured a weight 8^g. On the end of shaft 7 adjacent said compound lever is keyed a broad faced pulley 9, which is partially encircled at one side by a brake band 9^a, one end of which is attached at 9^b to a bracket 1^o; and the other end of which is attached at 9^c to a short arm 8^j of the compound lever. The weight 8^g acting on the compound lever applies the brake strap frictionally to the surface of the pulley 9. Above the friction brake is an ordinary device 8^m for the purpose of confining the strap to the pulley and overcome any tendency of the brake strap to bulge and not release properly.

In the front elevation of the packer (Fig. 1) the platform or carriage is shown about half-way of the scope of its travel. When the sack is empty and ready to start packing, the platform will approach the packing tube shown above and will recede from this according to the length of the package. The tripping device 6^d is adjustable and slides up and down on the rod while the stud 6^e that is attached to the rod by the side of the carriage is stationary and its purpose is to engage the lever 5^f and start the packer when the platform is close to the bottom of the tube.

The brake strap being connected to the compound lever the motion of the lever, upward or downward, will tighten or loosen the brake strap.

Attached to the pulley 9 beside the brake strap 9^a is a strap 9^e which is wrapped around the pulley 9 and passed over a grooved guide roller 9^f mounted on a bracket 1^p attached to the adjacent upright 1 and having on its lower end a weight 9^g.

Operation: The friction pulley 4^b is released from contact with the disk 2^b by the action of the spring 4^h whenever the locking

device 5^a is released by the descent of the platform 6 to a predetermined point. The starting of the packer is accomplished automatically upon the ascent of the platform 6 until the stud 6^e engages the arm 5^f and causes a partial revolution of the rock shaft 5^e and throws the pivot 5^c inward beyond the center of shaft 5^e where it is firmly held until it is disengaged by the stud 6^d engaging arm 5^b when the carriage descends. The raising of the platform is caused by pressing down the foot treadle 8^a; which causes the yoke 7^e to swing and tightens the belt 7^g which in turn causes the revolution of the shaft 7 and the grooved pulleys thereon take up ropes 6^m. Simultaneously with the movement of yoke 7^e to tension belt 7^g, the rod 8^d oscillates the compound lever and releases the friction on pulley 9, and thus enables the belt 7^g to easily operate shaft 7 and raise the platform. A bag or receptacle should have been slipped on the packing tube 3^a before the platform reaches its uppermost position; and when the packer shaft starts the flour or other material is forced into the bag and packed therein gradually forcing down the bag and platform until the desired amount of material is packed in the bag and the friction drive is disengaged, as above described. The descent of the carriage is controlled by the brake 9^a.

By driving the packer shaft with a disk friction I can readily change the speed of the packer according to the size of the package it is desired to pack; this is done by loosening the friction pulley 4^b and sliding it back or forward along the shaft 4 to set it nearer to, or farther from, the center of the disk, thus changing the speed.

What I claim is:

1. In a packing machine, the combination of a packer shaft, a frictional disk thereon, a pulley adjustable axially of and coöperating with said disk for operating said shaft, means for moving the pulley edgewise to or away from the disk, and means for holding the periphery of said pulley in engagement with the disk during the packing operation; with a movable package supporting platform and devices controlled by the platform for releasing the holding means to stop the operation of the shaft when a package is filled.

2. In a packer, the combination of a packing tube, a packing shaft, a friction disk on said shaft, a driving shaft, a pulley on said driving shaft adapted to have its periphery engage the disk, means for moving the driving shaft bodily laterally away from the disk to normally separate the pulley edgewise from the disk; and means for holding the disk and pulley in contact.

3. In a packer, the combination of a packing tube, a packing shaft, a friction disk on said shaft, a driving shaft, a pulley on said driving shaft, means for moving the driving shaft bodily laterally to separate the pulley edgewise from the disk, and means for holding the shaft to retain the pulley in contact with the disk; with a movable platform supporting the package to be packed, a rotary shaft, means for suspending said platform from said shaft, and devices controlled by the platform for releasing the holding means and stopping the operation of the shaft.

4. In a packer, the combination of a hopper, a packing tube, a packer shaft, a friction disk on the packer shaft, a laterally movable drive shaft adjacent the friction disk, a friction pulley on said drive shaft, and means for bodily moving said drive shaft laterally to separate the pulley edgewise from the disk, and means for moving said shaft bodily laterally to bring the pulley into contact with the disk.

5. In a packer, the combination of a hopper, a packing tube, a packer shaft, a friction disk on the packer shaft, a laterally movable drive shaft adjacent the friction disk, an adjustable friction pulley on said drive shaft, a spring for moving said drive shaft bodily laterally to separate the pulley edgewise from the disk, and a catch lever and connections for moving said shaft bodily laterally to bring and hold the pulley in contact with the disk.

6. In a packer, the combination of a hopper, a packing tube, a packer shaft, a frictional disk on the packer shaft, a laterally movable drive shaft adjacent the friction disk, a friction pulley on said drive shaft, means for moving said drive shaft laterally to separate the friction pulley from the disk, and means for depressing said shaft to bring the pulley into contact with the disk; with a movable platform, and devices connected with the platform for tripping the shaft controlling devices so as to bring the friction members into contact at the beginning of the packing operation, and means on said carriage for tripping said devices to separate the friction members at the end of the packing operation.

7. In a packer, the combination of a hopper, a packing tube, a packer shaft, a friction disk on the upper end of said shaft, a transverse drive shaft mounted in swinging bearings above the disk, a friction pulley on said shaft, means for raising said shaft to separate the friction pulley from the disk, a rod for depressing said shaft to hold the pulley in contact with the disk, and a catch lever connected to said rod; with a vertically movable carriage, a device on said carriage adapted to operate the said catch lever to cause the friction devices to engage upon the ascent of the carriage, and a device on said carriage adapted to engage said catch lever to cause the separation of the

friction devices upon the descent of the carriage.

8. In combination, a hopper, a packing tube, a packer shaft, a friction disk on the upper end of said shaft, a transverse drive shaft mounted in swinging bearings above the disk, a friction pulley on said shaft, a spring for raising said shaft to separate the friction pulley from the disk, a rod for depressing said shaft to hold the pulley in contact with the disk, a catch lever connected to said rod, a rock shaft, and arm thereon pivotally connected to said lever, and a trip arm connected to said rock shaft; with a vertically movable carriage, a device on said carriage adapted to engage the said arm and bring the friction devices into operative engagement upon the ascent of the carriage, and a device on said carriage adapted to engage said catch lever and permit the separation of the friction devices upon the descent of the carriage.

9. In a packing machine, the combination of a movable platform, a shaft, and connections between said shaft and platform for raising the latter, a gear on said shaft, a pivoted frame beside the gear, and a pinion on said frame engaging said gear; with frictional means for driving said pinion and means for moving said frame to cause the frictional means to drive the pulley.

10. In a packing machine, the combination of a movable platform, a shaft and connections between said shaft and platform for raising the latter when the shaft is rotated, a gear on said shaft, a pivoted frame beside the gear, a pinion on said frame engaging said gear, and a pulley attached to the pinion shaft; with a driving shaft and pulley thereon, a belt between the pulley on the driving shaft and the pulley on the frame, and means for moving said frame so as to tension the belt and thereby cause rotation of the platform lifting shaft.

11. In a packing machine, the combination of a movable platform, a shaft, and connections between said shaft and platform for raising the latter when the shaft is rotated, a gear on said shaft, an oscillating yoke beside the gear, a pinion on said yoke engaging said gear, and a pulley attached to the pinion shaft; with frictional means for driving said pulley, and means for rocking said yoke so as to cause the frictional means to drive the pulley.

12. In a packing machine, the combination of a movable platform, a shaft and connections between said shaft and platform for raising the latter when the shaft is rotated; a gear on said shaft, an oscillating yoke beside the gear, a pinion on said yoke engaging said gear, and a pulley attached to the pinion shaft; with a driving shaft and pulley thereon, a belt between the pulley on the driving shaft and the pulley on the yoke, and a treadle and connections for rocking said yoke frame so as to tension the belt and thereby cause rotation of the platform lifting shaft, substantially as described.

13. In a packing machine, the combination of a movable platform, a shaft and connections between said shaft and platform for raising the latter when the shaft is rotated, a gear on said shaft, a pivoted frame beside the gear, a pinion on said frame, engaging said gear, means for driving said pulley, and means for moving said frame to cause the friction means to drive the pulley and thereby raise the platform; with a friction brake for the said shaft, and means whereby the brake is released while the platform raising shaft is being operated to raise the platform.

14. In a packing machine, the combination of a movable platform, a shaft and connections between said shaft and platform for raising the latter when the shaft is rotated, a gear on said shaft, an oscillating yoke beside the gear, a pinion on said yoke engaging said gear, a pulley attached to the pinion shaft, frictional means for driving said pulley, and means for rocking said yoke so as to cause the frictional means to drive the pulley and thereby raise the platform; with a friction pulley on the said platform raising shaft, a brake strap engaging said pulley, and means whereby the brake is released when the platform raising shaft gear is operated to raise the platform.

15. In a packing machine, the combination of a movable platform, a shaft and connections for raising the platform, a gear on said shaft, a pivoted frame beside the gear, a pinion on said frame engaging said gear, and a pulley attached to the pinion shaft; with a driving shaft and pulley thereon, a belt between the pulley on the driving shaft and the pulley on the frame, and means for moving said frame so as to tension the belt and thereby cause rotation of the platform lifting shaft, friction brake pulley on the said platform raising shaft, a brake strap engaging said pulley, and means connected with the frame moving means whereby the brake is released while the platform raising shaft is being operated to raise the platform.

16. In a packing machine, the combination of a movable platform, a shaft and connections for raising the platform, a gear on said shaft, an oscillating yoke beside the gear, a pinion on said yoke engaging said gear, frictional means for driving said pinion, and means for rocking said yoke so as to cause the frictional means to drive the pulley and thereby raise the platform; with a pulley on said shaft, a frictional band encircling said pulley, a compound lever having one arm connected with the band, a

weight on said lever for applying the brake, and connections whereby the brake is releaser when the shaft driving devices are operated to raise the platform.

17. In a packer, the combination of a vertically movable platform, a transverse shaft, means connected with the shaft for raising the platform, a gear on one end of the shaft, a friction brake pulley on the other end of the shaft, a yoke pivoted on the shaft beside the gear, a pinion on the yoke engaging said gear, a pulley on the pinion shaft, a driving shaft, a pulley thereon, a belt connecting the pulley on the driving shaft with the pulley on the pinion shaft, a brake strap engaging the brake pulley, a compound weighted lever engaging one end of the brake strap, a treadle actuated rock shaft, a rod connecting this shaft with the said yoke, and a rod connecting said shaft with the said lever, whereby when the rock shaft is rocked in one direction the belt is tightened so as to cause the pinion to drive the gear on the shaft and simultaneously the brake strap is loosened.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

JOHN B. CORNWALL.

Witnesses:
JUL. A. GERWEN,
E. P. CHURCHILL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."