

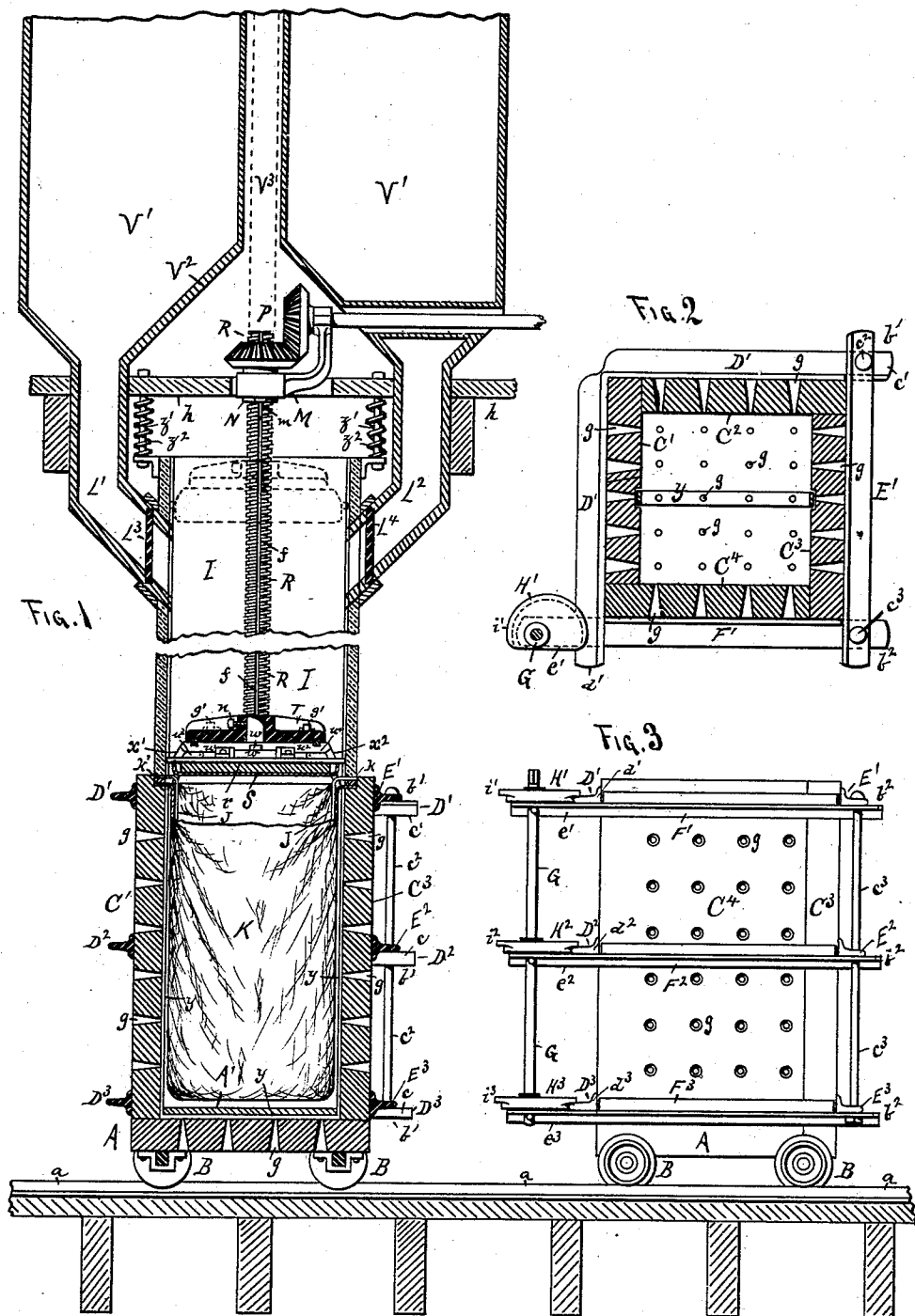
(No Model.)

2 Sheets—Sheet 1.

J. E. BELT.
BRAN PACKER.

No. 279,854.

Patented June 19, 1883.



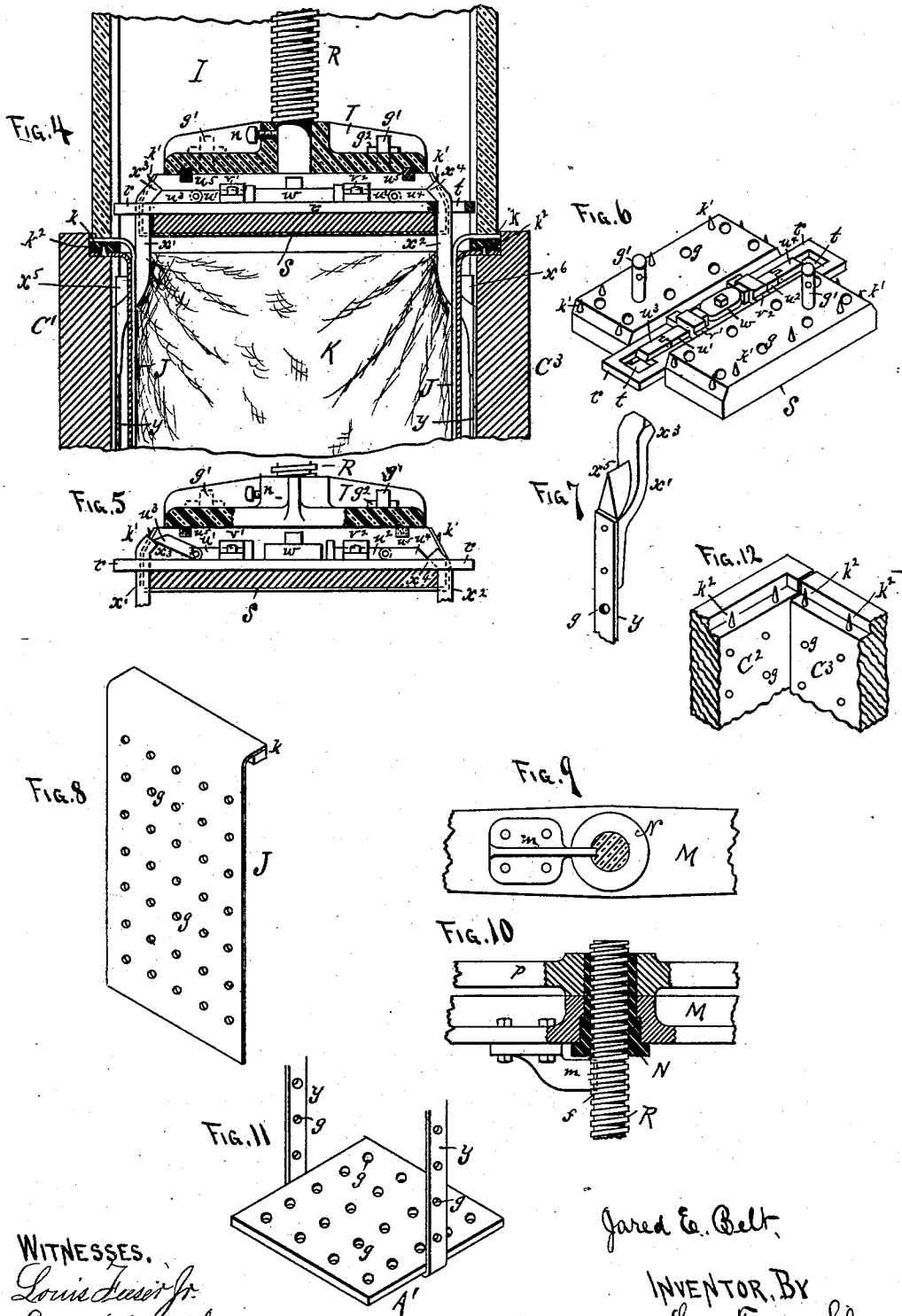
WITNESSES
Louis Fisher Jr.
Daniel Murphy.

Jared E. Belt,
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Louis Fessier Jr.
Daniel Murphy

Jared E. Belt

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UNITED STATES PATENT OFFICE.

JARED E. BELT, OF MINNEAPOLIS, MINNESOTA.

BRAN-PACKER.

SPECIFICATION forming part of Letters Patent No. 279,854, dated June 19, 1883.

Application filed March 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, JARED E. BELT, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have made certain new and useful Improvements in Bran-Packers, of which the following is a specification.

This invention relates to machines for compressing bran and other similar material into suitable receptacles; and it consists in the construction and arrangement of parts hereinafter set forth and claimed. I attain the objects sought by the use of the mechanism illustrated by the accompanying drawings, in which—

15 Figure 1 is a sectional side view of the packer complete. Fig. 2 is a sectional plan view of the casing. Fig. 3 is a side view of the packer-case. Fig. 4 is an enlarged cross-sectional view of the upper part of the packer-case, the lower portion of the bran-reservoir, the follower-head, the follower-plate, sheet-metal linings, automatic gripping-dogs, and bran-receiving fabric, illustrating more clearly their construction and operation. Fig. 5 is a cross-sectional view of the follower-plate and a side view of the follower-head, showing the operation of the gripping-dogs. Fig. 6 is a detached perspective view of the follower-plate. Fig. 7 is a perspective view of one of the gripping-dogs with a portion of one end of the bale-strap attached thereto. Fig. 8 is a perspective view of one of the metal linings. Fig. 9 is an enlarged bottom plan view, and Fig. 10 is an enlarged sectional side view, of a portion of the screw and its operating mechanism detached. Fig. 11 is a detached perspective view, on the same scale as Figs. 1, 2, 3, 6, and 8, of the auxiliary bottom plate and a portion of the bale-band. Fig. 12 is a perspective view of a portion of the upper part of the bran-packing case.

A is a base or platform mounted upon wheels B, having flanges thereon and adapted to run upon tracks *a*, and upon which platform a square box or frame formed of four sides, C' C' C' C', is arranged. The sides C' C' are rigidly fixed to the platform A, while the other two sides, C' C', are hinged at the corners *b'* *b'*, as shown in Figs. 2 and 3.

50 D' D' D' are a number of right-angled straps embracing the fixed sides C' C', and bolted or

otherwise attached thereto to support them, and having projecting ends *c'*, to which the ends of straps E' E' E', secured across the side C', are pivoted by a rod, *c*, passing down through the ends *c'*, and through the ends of the straps E' E' E', to form the hinges before mentioned. The opposite ends of the straps E' E' E' are similarly pivoted at *b'* to one end of similar straps, F' F' F', secured across the side C', as shown, while the ends *e'* *e'* *e'* of the straps F' F' F' are arranged to underlap the ends *d'* *d'* *d'* of the straps D' D' D'. A rod, *c*, passes down through the ends *b'* of the straps E' E' E', similar to the straps D' D' D' E' E' E' and rod *c*.

G is an upright shaft passing down through the ends *e'* *e'* *e'* of the straps F' F' F', and provided with cams H' H' H', mounted thereon above the ends *e'* *e'* *e'*. Small concaves are cut in the edges of the ends *d'* *d'* *d'* of straps D' D' D', into which the edges of the cams fit, and the cams are provided with overhanging flanges *i'* *i'* *i'* upon their upper surfaces, which project over the tops of the ends *d'* *d'* *d'*, as shown in Fig. 3. By this arrangement when the shaft G is revolved the edges of the cams H' H' H' will enter the concaves made for them in the ends *d'* *d'* *d'* and the flanges *i'* *i'* *i'*, and will assist in holding the ends *d'* *d'* *d'* down upon the straps F' F' F', and when it is desired to release the casing the shaft is turned, the cams released, and the casing free to be swung open.

The straps supporting the casing are shown formed from T-iron, but may be made of any other suitable material.

Above the casing C' C' C' C' is a reservoir, I, of suitable length, and with its interior size about the same as the casing. The reservoir is suspended from the floor *h*, or to a separate frame above, by rods *z'*, and with coiled springs *z'* around them, above the reservoir, to hold the latter down upon the casing, but at the same time to leave it free to be raised upward, as hereinafter shown.

An eccentric or other suitable means may be employed to elevate the reservoir.

Across the floor-timbers *h*, or other suitable frame, above the reservoir, a bridge-tree, M, is secured, in which a metal collar or nut, N, is mounted and adapted to be revolved by gear-

ing P, or other suitable mechanism. The interior of this nut is formed with a screw-thread, (see Fig. 10,) in which a screw, R, is adapted to run, so that by revolving the nut N the screw may be run up or down. A slot or channel, *f*, is cut in the side of this screw its entire length, in which a stationary feather-key, *m*, secured upon the bottom of the bridge-tree M or other suitable object, fits to hold the screw from turning when being run up and down by the nut N. (See Figs. 9 and 10.)

Upon the lower end of the screw R a follower-plate, T, is secured by a set-screw, *n*, so that it can be adjusted to any point around the screw, and may be made of any desired shape or size, the size shown being a little smaller than the casing or reservoir. Beneath this follower-plate is an auxiliary follower-plate, S, somewhat larger than the plate T, or about the size of the casing or reservoir, and adapted to be loosely attached to the follower T by pins *g'*, fixed in the follower-plate S, to project up through holes in the follower-head T, and held in place by keys *g''*, in the same manner as shown in my patent of May 27, 1879, No. 215,787.

Across the top of the auxiliary plate S a channel or groove is cut, in which a flat bar, *r*, of steel is secured, and having projecting ends in which square holes *t* are formed. (See Fig. 6.) *u' u''* are two flat plates or "bolts," lying flat upon the plate *r*, and adapted to slide inward and outward beneath small guides *v' v''*. The outer ends of these bolts are provided with hinged points *u''' u''''*, whose outer ends project over the holes *t* a short distance when the bolts are moved outward, but will not project over the holes when the bolts are moved inward. Between the inner ends of the bolts *u' u''* a double-sided cam, *w*, longer across one way than the other, is loosely pivoted upon the plate *r*, and adapted, when turned with its longest diameter parallel with the plate *r*, to force the bolts *u' u''* outward, and when turned at right angles to the bolts to leave them free to be forced inward again.

x' x'' are two metal catches or dogs, having inclined lips *x''' x''''*, respectively projecting inward from their upper ends, and adapted to catch upon the outer inclined ends of the bolts *u' u'' u''' u''''* when passed upward through the holes *t*, as shown in Figs. 4 and 5, and as hereinafter shown.

The dogs *x' x''* below the heads *x''' x''''* curve outward and downward, as shown, and are provided with pointed shoulders *x''' x''''* to "chute" the bran off and prevent its lodging upon the dogs, as hereinafter shown. The pointed shoulders to the dogs *x' x''* are duplicates of each other, and are clearly shown in Figs. 4 and 7.

y is a metal strap secured by its ends to the lower parts of the dogs *x' x''*, and passing downward inside the casing *C' C'' C''' C''''* and across the base A, as shown, and outside the receptacle in which the bran is to be packed.

Above the gearing P in the hopper V' is a

pointed housing or covering, V², which chutes the bran off from either side and prevents it falling upon the gears. Leading from the bottoms of these housings are spouts L' L², leading downward and opening into the reservoir I, below the bridge M, and provided with valves L³ L⁴, by which the flow may be shut off.

V³ is a tube or shield running up from the housing V², in which the screw R runs when elevated to protect it from the bran.

This invention is an improvement on my patent of May 27, 1879, No. 215,787, bran-packers, and its operation is as follows:

The cam *w* is turned with its longest diameter parallel with the plate *r*, to hold the bolts *u' u''* outward and the follower-plate S loosely connected to the follower T, so that when the latter is run up with the screw the former will go with it. The cloth top of the bran-receptacle is then attached beneath and around the edges of the plate S by setting its edges over pins *k'*, projecting upward from the edges of the plate S, or by passing a rubber band around both the plate and fabric, or in any other suitable manner, and the nut N revolved backward to run the screw R upward to bring the follower T and plate S up into the top of the reservoir, so that the inflowing bran will not fall upon it.

The bale-band *y*, with the dogs *x' x''* attached, will then be set upon the platform A, with one side resting in a channel formed for it in the fixed side C', and an auxiliary bottom, A', placed upon top of that part of the band *y* resting upon the bottom A, as shown in Figs. 1 and 11. The hinged sides C³ C⁴ are then swung around into position and clamped by the cams H' H² H³, the opposite side of the band *y* at the same time entering a channel formed for it in the side C³, as shown in Fig. 2. The cloth bag or receptacle K is then suspended in the casing upon pins *k''*, which will project upward from the top of the casing, as shown in Figs. 4 and 12, or in any other suitable means, and the sheet-metal linings J, suspended within the receptacle, with their upper ends hanging on the edge of the casing by their upper turned-over edges, *k*. The reservoir I is then lowered down, as shown in Figs. 1 and 4, with its lower edge resting upon the edges *k* of the linings J, thus forming a continuous line from the top of the reservoir to the bottom of the receptacle without obstructions. The valves L³ L⁴ are then opened and the bran allowed to run in and fill the reservoir and receptacle, and when a sufficient quantity has been run in to fill the receptacle when pressed down by the screw the valves are closed and the screw R run down until the follower-plate S forces the holes *t* in its plate *r* down over the dogs *x' x''* and catches the lips *x''' x''''* over the hinged ends *u''' u''''* of the bolts *u' u''*, as before described, thus firmly and automatically connecting the follower-plate and the band *y* together, the band and follower-plate and auxiliary bottom plate, A', thus forming a temporary binder, so that when the reser-

voir I is lifted upward, the follower-head T released from the follower-plate S, the casing C' C' C' C' opened by reversing the cams H' H' H', the pressed bale may be removed without danger of losing its contents. For temporarily securing the follower-head to the follower-plate, pins may be employed, as shown and described in my patent of May 27, 1879, No. 215,787. As before stated, the cloth top or cover of the receptacle is attached to the bottom of the follower-plate S, so that after the bale has been removed, with the follower-plate on it, it is only necessary to draw the metal linings out and sew the edges of the cover fast to the sides of the receptacle to complete it. The cam w is then turned with its shortest diameter parallel with the bolts $u' u'$, when the reaction of the bran will force the plate S upward and cause the inclined outer ends of the hinged portions $u' u'$ to be acted upon by the inclined sides of the lips $x' x'$ of the dogs $x' x'$ to force the bolts inward and throw the latter free from the receptacle. After the receptacle has been packed, and before the casing is opened, it will be run out from beneath the reservoir by means of the track a and wheels B, so that while the first package is being completed by sewing on the cover another casing having the empty receptacle, &c., arranged therein may be run beneath the reservoir and filled, so that no time may be lost. By providing a number of the casings C' C' C' C' A and bands y and follower-plates S, one screw R and reservoir I may be employed to pack into them, thus gaining an important advantage in the matter of time. This is an important feature of my invention, as it greatly increases the capacity of the machine.

In forcing down the loose bran into the receptacle K a large amount of air is necessarily expelled, and to provide a means of escape for this air I perforate all parts of the apparatus with which the bran comes in contact, as shown at g , not only the larger parts—such as the sides C' C' C' C', bottom A, and reservoir I—but also the band y , auxiliary bottom plate, A', follower-plate S, and sheet-linings J. The follower-head T will be perforated like the other parts, as shown in the drawings. Experiment has demonstrated that the best form for these perforations is the one shown—viz., small at the inside and larger at the outside, so that while permitting a free escape to the air they prevent the bran from passing through or clogging the air-passages.

As before stated, the rear sides of the dogs $x' x'$ are provided with wedge-shaped shoulders $x^5 x^6$. When the bran is being forced down, these dogs projecting a short distance into the casing, some bran will lodge behind them, and if these shoulders $x^5 x^6$ were not present the bran would lodge upon and accumulate behind the dogs and force them inward and cause the points $x' x'$ to miss the holes t ; but by this arrangement the bran is thrown off and the entrance of the dogs into the holes t insured.

Should smaller bales be required than the

size of the casing C' C' C' C', auxiliary sides and bottom may be placed in the casing to reduce the size, and a smaller follower-plate S and head T provided, so that the same machinery may be employed for all sizes.

The casing may be made of any size or shape—round, square, oblong, or polygonal; and the linings J may be made of any hard smooth-surfaced substance.

The dogs $x' x'$ may be modified to suit different kinds of material, as other stuff than bran may be packed by this machine.

Small rubber cushions u^5 , or other springs, will be placed in the bottom of the follower-head T, to throw the ends $u' u'$ downward and insure their perfect action.

What I claim as new is—

1. A casing provided with detachable side and cross straps to the side, in combination with a revolving shaft provided with cams adapted to bear against the cross-straps so as to hold the casing, substantially as and for the purpose set forth.

2. The combination of the casing, the movable reservoir above it, and the spring to depress the reservoir, substantially as and for the purpose set forth.

3. The combination of the operating-gear, the hopper, an inclined housing to the gear, the reservoir, and the delivery-spouts leading from the hopper and opening into the reservoir below the gearing, substantially as set forth.

4. The combination of the perforated casing, the receiving-receptacle, having sides permitting the escape of air, the perforated lining, the filling-reservoir, and the compressing-follower, substantially as set forth.

5. The follower provided with a plate having openings in its ends, in combination with the bolts and the intermediate cam for projecting the bolts, substantially as and for the purposes set forth.

6. The follower provided with a plate having openings in its ends, in combination with bolts having hinged points and an intermediate cam for projecting the bolts, substantially as and for the purpose set forth.

7. The follower, the perforated plate connected thereto, the bolts provided with hinged and beveled points, and the cam for operating the bolts, in combination with the casing, the receiving-receptacle and the dogs, provided with inclined ends and inclined shoulders, substantially as and for the purposes set forth.

8. The combination of the follower, the perforated plate, the bolts provided with hinged points, the cam for operating the bolts, and the straps having dogs at their upper ends provided with inclined lips and inclined shoulders, substantially as and for the purposes set forth.

9. A receptacle for the bran, a casing for supporting said receptacle, a band encircling said receptacle, a follower-plate having the cover of said receptacle temporarily connected thereto, an auxiliary bottom plate interposed

between said band and the bottom of said receptacle, and means for automatically connecting said follower-plate to said band, substantially as hereinbefore set forth.

5 10. The follower-plate S, having the perforated plate *r*, bolts *u'* *u''* *u'''* *u''''*, and cam *w*, in combination with the band *y*, having the dogs *x'* *x''*, substantially as and for the purpose set forth.

10 11. The combination, with the dogs *x'* *x''*, of the pointed shoulders *x'''* *x''''*, substantially as and for the purpose set forth.

15 12. The casing consisting of the platform A, fixed sides C' C'', and movable sides C''' C'', substantially as set forth.

13. The casing consisting of the platform A, fixed sides C' C'', and movable sides C''' C'', and mounted upon wheels B, adapted to run upon

tracks *a*, in combination with straps for supporting said casing, and cams H' H'' H''', for 20 securing its movable sides, substantially as set forth.

14. The casing consisting of the fixed sides C' C'' and movable sides C''' C'', and provided with straps for supporting them, in combination 25 with cams H' H'' H''', having the flanges *i'* *i''* *i'''*, adapted to rest over the edges of said straps, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses. 30

JARED E. BELT.

Witnesses:

GEORGE WEITBREHT,

J. A. BARNES.