F. J. BOBSEIN.

GUTTER CLEANING DEVICE FOR STABLES.

APPLICATION FILED MAR. 3, 1919.

1,323,954.

Patented Dec. 2, 1919.

3 SHEETS—SHEET 1.

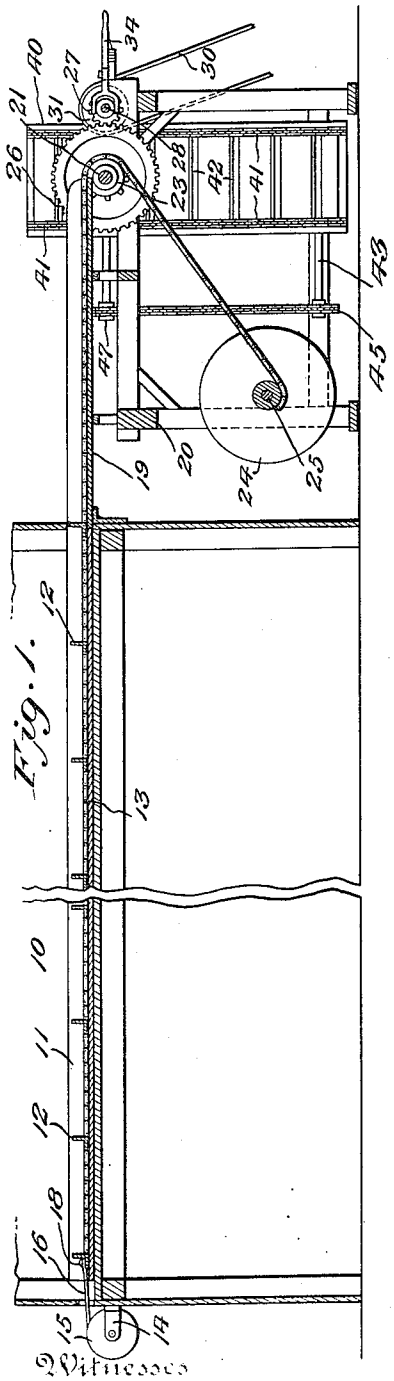


Fig. 1.

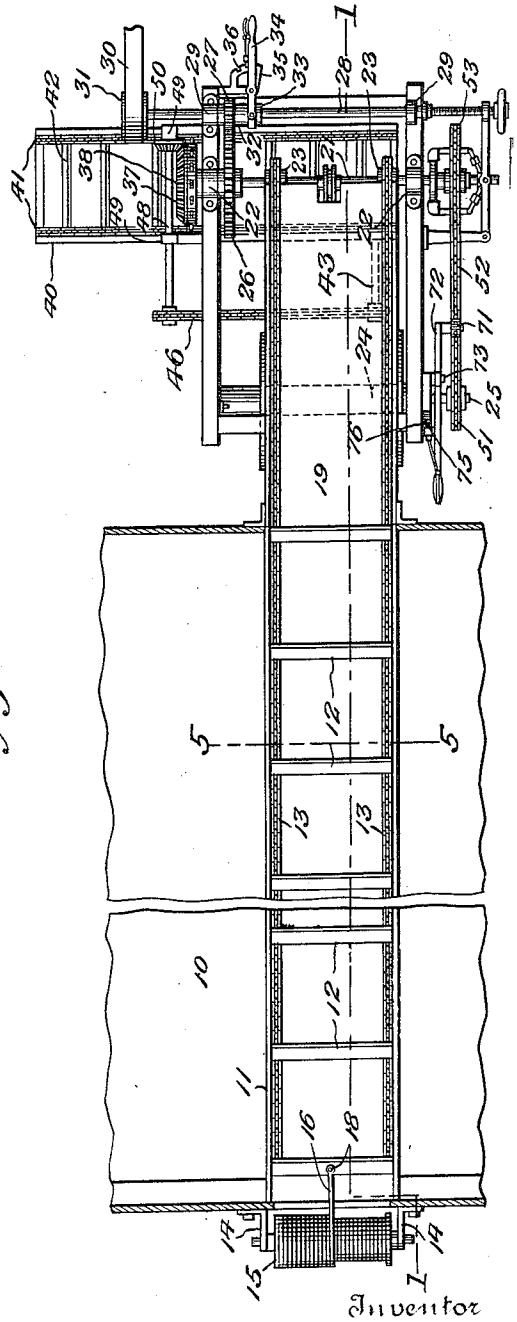


Fig. 2.

Witnesses

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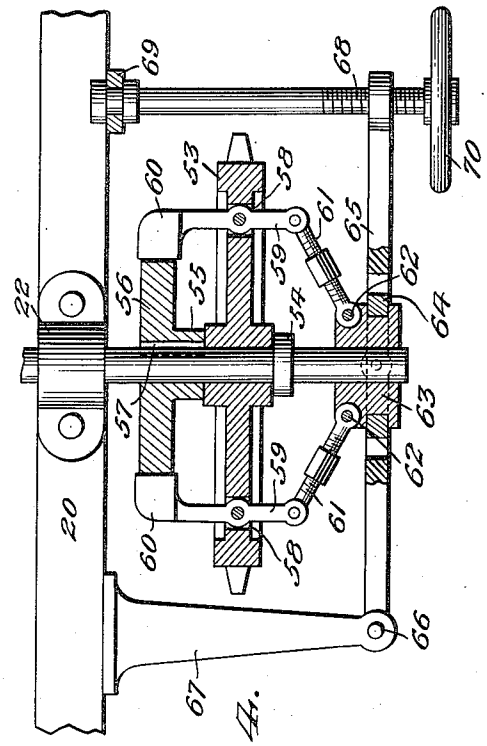


Fig. 4.

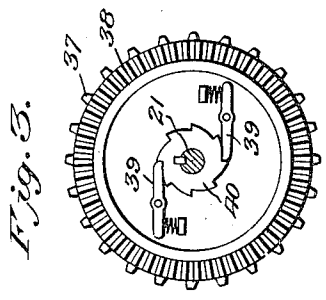


Fig. 3.

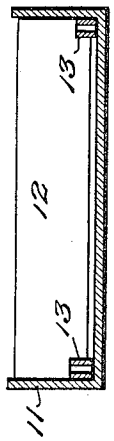


Fig. 5.

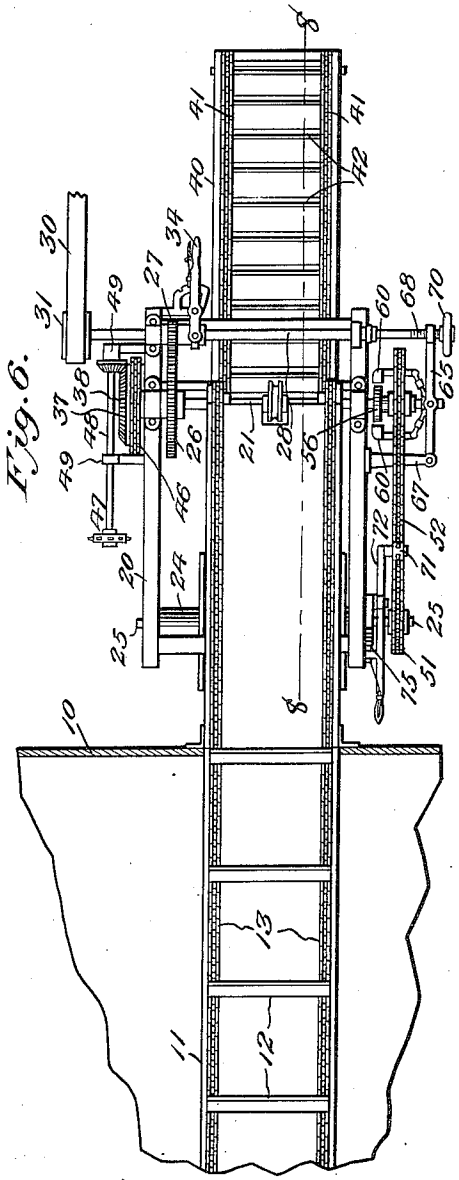


Fig. 6.

Witnesses

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3 SHEETS—SHEET 3.

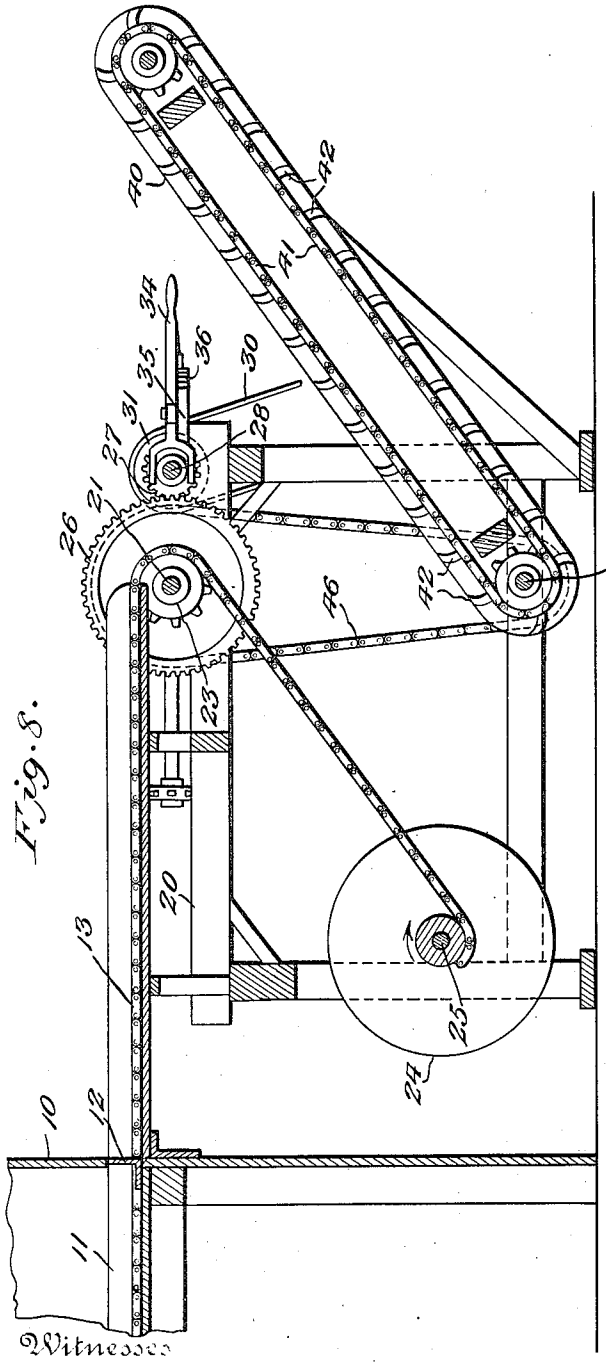


Fig. 8.

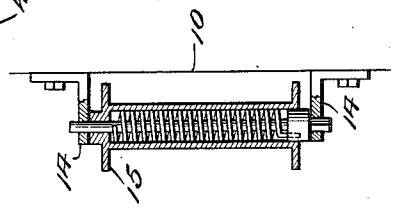


Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

FRANK J. BOBSEIN, OF GOWANDA, NEW YORK.

GUTTER-CLEANING DEVICE FOR STABLES.

1,323,954. Specification of Letters Patent. Patented Dec. 2, 1919.

Application filed March 3, 1919. Serial No. 280,206.

To all whom it may concern:

Be it known that I, FRANK J. BOBSEIN, a citizen of the United States, residing at Gowanda, in the county of Cattaraugus and State of New York, have invented new and useful Improvements in Gutter-Cleaning Devices for Stables, of which the following is a specification.

This invention has reference to stables, and is particularly directed to gutter cleaning devices therefor.

The primary object of the invention is to produce a mechanical device which may be operated by any suitable power for easily, quickly and thoroughly cleaning a manure gutter of a stable without necessitating the manual handling of the contents of said gutter.

A further object of the invention is to produce a gutter cleaning device for stables including a conveyer arranged in the gutter and having means for operating the same, and an elevating device operated by said means designed to be arranged either transversely of the conveyer or in a direct line with the outer end thereof whereby to elevate and deposit the manure in a suitable car or vehicle for conveying the same a distance away from the stable or for depositing the manure on a suitable dump.

It is a further object of the invention to produce a gutter cleaning device for stables that shall comprise a conveyer arranged in the gutter, spring influenced for retaining the same in one position in the gutter and having means connected thereto and arranged exteriorly of the stable whereby the said conveyer may be moved bodily out of the stable to deposit the contents of the gutter on a chute and permit of the same being delivered from said chute to elevating and conveying means.

It is a still further object of the invention to provide a cleaning conveyer for stable gutters with novel means for moving the same both in and out of the stable.

Other objects and advantages will appear as the nature of the invention is better understood, reference being had to the accompanying drawings, in which:

Figure 1 is a sectional view approximately on the line 1—1 of Fig. 2.

Fig. 2 is a plan view of a portion of a stable, illustrating the application of the improvement thereto.

Fig. 3 is a face view of the combined sprocket and beveled toothed wheel showing the manner in which the spring pressed dogs carried thereby engage with the ratchet on the shaft, the shaft being in section.

Fig. 4 is a detail plan, parts being in section, of the regulating means for the pulley on which the elevator is wound.

Fig. 5 is a detail transverse sectional view approximately on the line 5—5 of Fig. 2.

Fig. 6 is a detail plan view showing the elevator arranged in a line with the outer end of the conveyer.

Fig. 7 is a sectional view through the spring influenced drum.

Fig. 8 is an enlarged sectional view approximately on the line 8—8 of Fig. 6.

A stable of a barn is conventionally illustrated in the drawings and is indicated by the numeral 10. The stable is provided with a manure gutter 11 extending transversely therethrough.

In the gutter 11, arranged transversely thereof are angle flights 12 that have their horizontal portions secured on chains 13—13 positioned near the sides of the gutter 11. The flights and chains provide the manure conveyer for the device.

On one side of the stable 10, journaled in suitable brackets 14 secured to the outer wall of the said side is a drum 15. This drum is preferably spring influenced in one direction so that a cable 16 thereon is normally wound around the said drum, the said cable 16 being connected, as at 18, to the inner end flight of the conveyer.

The gutter is extended a suitable distance beyond the side of the barn or stable 10 opposite that on which the spring influenced drum 15 is journaled. The gutter extension or chute 19 is supported on a frame 20. On the frame 20, adjacent to the outer end thereof is a shaft 21 that is journaled in suitable bearings 22 on the upper member of the said frame. On the shaft 21 are sprocket wheels 23 around which the chains 13 are trained and direct to a spool 24 provided with a suitable shaft 25 that has its ends journaled in suitable bearings in the lower and inner portion of the frame 20, that is, the end of the frame nearest the barn or stable.

On the shaft 21 is secured a pinion 26 that is in mesh with a second pinion 27 secured on a shaft 28 that is journaled in bearings 29 on the outer and upper end of the frame 20. The shaft 28 imparts motion to

the shaft 21 and to other elements of the structure hereinafter to be described, and it will therefore be referred to as the power shaft. The shaft 28 receives motion from any suitable source of power imparted thereto by a belt 30 that is trained around a belt wheel 31 secured on one of the ends of the power shaft 28. The pinion 27 is loosely mounted on the power shaft and has one of its sides provided with a clutch face 32 designed to be engaged by a suitable clutch member 33 that is feathered on the power shaft 28, the clutch member 33 being operated by a suitable lever 34 pivoted on a suitable bracket 35 on the frame. The lever 34 is provided with a spring dog operated by a suitable handle, the said dog engaging with the segment 36 connected with the bracket 35. By the clutch arrangement the shaft 28 is permitted to run without influencing the shaft 21 so that the engine or other source of power to which the belt 30 is connected need not be halted when the conveyer is not operated.

On one end of the shaft 21 is loosely secured a sprocket wheel 37 having its outer face provided with a beveled toothed surface 38. The outer face of the sprocket wheel 37 is hollow or formed with a depression within which is pivotally secured spring influenced dogs 39 that co-engage with a ratchet wheel 40 that is keyed on the shaft 21 (see Fig. 3). By this arrangement the sprocket wheel 37 and the beveled toothed wheel 38 associated therewith will revolve only when the shaft is turned in one direction.

The frame 20 has associated therewith an elevator 40 comprising a gutter-like construction provided with endless chains 41 and flights 42 connected with said chains. The chains are, of course, trained around sprocket wheels at the upper and lower ends of the frame of the device, and the upper and outer end of the said frame is suitably supported to sustain the same at a desired inclination. The shaft for the lower sprocket wheels is indicated by the numeral 43, the same extending a suitable distance beyond one of the sides of the elevator, and its said end provided with a sprocket wheel 45. In the construction as illustrated in Figs. 1 and 2 of the drawings, the sprocket wheel 45 has trained therearound a sprocket chain 46 which is also trained around a sprocket wheel 47 secured on one end of a shaft 48 journaled in suitable bearing brackets 49 on the frame 20. On the shaft 48 is keyed or otherwise secured a beveled toothed wheel 50 which is in mesh with the beveled toothed surface 38 on the sprocket wheel 37. It will thus be noted that when motion is imparted to the shaft 21 from the shaft 28 the elevator will be operated, but the pawl and ratchet engagement between the wheel 37 and the shaft 21 permits of the operation of the elevator in one direction only, that in a delivery or elevating direction.

The chains 11 of the conveyer, as stated, have their outer ends secured to the barrel of the spool 24, and the shaft 25 for the said spool has one of its ends extending a suitable distance beyond one of the sides of the frame 20, and on this end is secured a sprocket wheel 51. Around this sprocket wheel is trained an endless chain 52 which is also trained around a sprocket wheel 53 that is loosely journaled on the projecting end of the shaft 21 opposite that on which the wheel 37 is arranged. The sprocket wheel 53 is held on the shaft 21 against movement in one direction by a collar or flange 54, and against movement in another direction by the hub 55 of a clutch wheel 56. This clutch wheel is keyed to the shaft 21 as indicated by the numeral 57. Pivotally secured in suitable opposed openings in the web of the sprocket wheel 53, as indicated by the numerals 58 are arms 59 having on one of their ends angularly disposed shoes 60 arranged opposite the periphery of the clutch wheel 56. The other ends of the arms 59 have pivotally secured thereto adjustably connected rod members 61 which are extended at an inward angle with respect to each other and which have their ends pivotally secured, as at 62 to a sleeve 63 that is loosely arranged upon the outer end of the shaft 21. The sleeve is provided with a continuous circular depression receiving therein the centrally curved portion 64 of an arm 65 that has one of its ends pivoted as at 66 to a bracket 67 that is secured to the frame 20, and its opposite end provided with a threaded opening, the threads of which being engaged by a screw 68. The inner end of the screw 68 is swiveled in a suitable bearing 69 connected to the frame 20, and the outer end of the said screw is provided with an operating wheel 70. The screw, when turned in one direction will swing the arm 65 to cause the rod 61 to swing the shoe carrying members 59 to bring the shoes 60 thereof in frictional engagement with the clutch wheel 56, and consequently lock the sprocket wheel 53 to the shaft 21. When so locked motion is imparted to the spool 24 so that the chains 13 of the conveyer will be wound around the said spool. When the screw 68 is turned to cause the clutch shoes 60 to be brought out of engagement with the clutch wheel 56 the spring in the drum 15 will turn the said drum and consequently return the conveyer to its initial position. The arrangement above described permits of the reversing of the said engine without influencing either the conveyer or the elevator, and the shaft 28 may be connected to other mechanism to be operated by the motive power by throwing the clutch 33 out of engagement with the clutch element 32 on the pinion 27.

Because of the piling of the chains, and perhaps the flights of the conveyer on the barrel of the drum 25, I have found it desirable to provide tensioning means for the endless chain 52 so that the spool may travel at different speeds. This means comprises a roller 71 arranged outwardly of the end of a lever 72 pivoted as at 73 to a suitable support. The lever has connected therewith a hand operated spring pressed dog 75 that engages with a toothed segment 76, whereby the pressure of the roller 71 against the chain 52 may be regulated and held when so regulated.

The elevator, in the construction illustrated in Figs. 1 and 2 of the drawings is arranged at one of the sides of the frame 20, as when the manure is to be deposited in a wagon or other conveyance. The elevator is removable and is designed to be arranged in a line parallel to that of the conveyer, either when delivering the material to a source of conveyance or to a dump. In this instance the chain 46 is removed from the sprocket wheels 47 and is arranged around the sprocket wheel 37, as shown in Fig. 6. In other respects the construction is similar to that described as is the operation thereof.

It is believed, from the foregoing description, when taken in connection with the drawings, that the simplicity and operation of the improvement will be readily apparent.

Having thus described the invention, what is claimed as new, is:—

1. In a device for cleaning stable gutters, a flexible conveyer in said gutter and movable therethrough, spring actuated means for influencing the conveyer in one direction for retaining the same in the gutter, a frame arranged exteriorly of the gutter, a shaft thereon around which the flexible conveyer is trained, a spool journaled on said frame having the end of the conveyer secured thereto, operating means for said shaft, and clutch controlled means between said shaft and the spool for rotating the spool with the shaft or for releasing the spool from influence by said shaft.

2. In a device for cleaning stable gutters, a flexible conveyer longitudinally movable through said gutter, spring actuated means for influencing the conveyer in one direction to retain the same in the gutter, a shaft around which the flexible conveyer is trained, a spool arranged below the shaft and having one end of the conveyer secured thereto, means for operating the shaft without influencing the conveyer, operating means loosely arranged upon said shaft and connected with the spool, and means for locking said operating means on said shaft to cause the turning of the spool with the shaft.

3. In a device for cleaning stable gutters, a flexible conveyer longitudinally movable through the gutter, a drum spring influenced in one direction, a cable thereon connected with the conveyer, influencing said conveyer for retaining the same in the gutter, a shaft around which the flexible conveyer is directed, a spool journaled below the shaft and having one end of the flexible conveyer secured thereto, means for imparting motion to the shaft without influencing the conveyer, a sprocket wheel loose upon said shaft, a sprocket wheel secured on the shaft of the spool and a chain trained around said sprocket wheels, and clutch operated means for locking the first mentioned sprocket wheel to the shaft or releasing the same from connection with the shaft.

4. In a device for cleaning stable gutters, a flexible conveyer longitudinally movable through the gutter, a drum spring influenced in one direction, a cable thereon connected with the conveyer, influencing said conveyer for retaining the same in the gutter, a shaft around which the flexible conveyer is directed, a spool journaled below the shaft and having one end of the flexible conveyer secured thereto, means for imparting motion to the shaft without influencing the conveyer, a sprocket wheel loose upon said shaft, a sprocket wheel secured on the shaft of the spool and a chain trained around said sprocket wheels, clutch operated means for locking the first mentioned sprocket wheel to the shaft or releasing the same from connection with the shaft, tensioning means for said chain, and locking means for said tensioning means.

5. In a device for cleaning stable gutters, a flexible conveyer arranged for longitudinal movement in said gutter, spring operated means arranged upon one of the ends of the gutter and connected with the conveyer for influencing the conveyer in one direction to retain the same in the gutter, a chute at the opposite end of the gutter, an elevator communicating with said chute, a shaft opposite said elevator around which the flexible conveyer is directed, and said conveyer being free of influence from said shaft, a spool journaled below the shaft and having the conveyer secured thereto, means for imparting motion to the shaft, means loose upon said shaft and connected with the spool, means for locking said last mentioned means to the shaft whereby to impart motion to the spool when the shaft is rotated, and means between said shaft and said elevator for imparting motion to the elevator in one direction only.

6. In a device for cleaning stable gutters, a conveyer arranged for slidable movement in the gutter comprising spaced chains and angle flights connected with said chains, spring influenced means connected to one of the ends of the conveyer for moving the same in one direction and for retaining the

same in the gutter, a chute at the end of the gutter opposite that provided with said spring means, a shaft journaled outward of the chute, loose sprocket wheels on said shaft engaging the chains of the conveyer, a spool below said shaft to which the conveyer chains are secured, means for imparting motion to the shaft, an elevator adjacent the chute, a wheel on the shaft revoluble therewith in one direction only, mechanism actuated by said wheel for operating the elevator, a sprocket wheel loose on said shaft, a sprocket wheel on the shaft of the spool, a chain trained around said sprocket wheels, a clutch wheel keyed on the shaft, revoluble clutch shoes connected with the sprocket wheel on the shaft and revoluble with said wheel, means for operating said clutch shoes to bring the same into or out of engagement with the clutch wheel to lock or release the sprocket wheel with respect to the shaft, tension means for said sprocket chain, and latching means for said tension means.

In testimony whereof I affix my signature.

FRANK J. BOBSEIN.