This invention relates to portable conveyors and the like, and particularly to a conveyor for elevating sand, gravel, coal or similar granular materials.

The prime object of the invention is to design a conveyor which can be compactly folded so that it can be easily transported from one location to another.

Another object is to provide a simple and practical conveyor which can be quickly folded and unfolded, and which can be quickly set at any desired angle of inclination.

A still further object is to provide an improved supporting and balancing means whereby both side and end thrust is eliminated, and whereby the conveyor can be quickly raised or lowered as desired.

A further object still is to provide a flexible drive to allow the conveyor to be driven regardless of the height or angle of inclination, and which also allows the conveyor to be folded without in any manner interfering therewith.

The above and other objects will appear as the specification progresses, reference being had to the accompanying drawings in which like reference numerals indicate like parts throughout the several views thereof.

In the drawings.

Fig. 1 is a side view of my improved portable foldable conveyor showing the conveyor folded and the belt removed.

Fig. 2 is a side view showing the conveyor set up for use.

Fig. 3 is a fragmentary cross sectional view of the truck illustrating the conveyor driving mechanism.

Fig. 4 is a front view of one of the booms.

Fig. 5 is a cross sectional view of the conveyor, also illustrating one of the return rollers.

Fig. 6 is a fragmentary detail of the top of the mast and showing the sheaves mounted thereon.

Fig. 7 is also a fragmentary view of the mast, parts being broken away to show the rollers.

Fig. 8 is a fragmentary sectional view illustrating the manner of leading the cables to the sounding drum.

Fig. 9 is a side view of one of the anchor plates.

Referring now particularly to the drawings in which we have shown the preferred embodiment of our invention, the numeral 1 indicates a frame supported on ground engaging wheels 2 in the usual manner, a mast, comprising a pair of spaced apart channels 3 and 4 mounted on the side members 5 of the frame at the center, being braced by the members 5 and the longitudinal brace 6. The upper ends of these channels being connected by a section of shafting 7 on which a plurality of pulleys shafting are rotatably mounted. Anchor plates 8 are also mounted on this shaft and to which the adjusting cables are anchored in a manner to be presently described. A motor 9 is mounted on the frame and spaced apart bearings 10 are secured to each respective corner as shown, and a shaft 10a is mounted therein, individual booms 11 and 11a respectively being pivotally mounted on this shaft at the front and rear, the upper ends of each boom being connected by means of a shaft 12 on which a plurality of sheaves 13 are mounted, the sides of said boom being reinforced by the braces 14, the lower ends of which are mounted on the shaft 10a, the upper ends being riveted or otherwise secured to the boom intermediate its length.

The conveyor comprises a number of sections 15 having plates or similar members 16 secured to the ends of each section, these plates being pivotally connected by the pin 17 to form a hinge, and when in set up position a similar pin 18 is inserted in suitable openings 19 provided in the lower portion of the plate, thereby locking the sections rigidly together and forming a strong rigid structure, each section comprises a plate 20 having the reinforcing channels 21 secured to the edges thereof. Spaced apart boxes 22 are secured to the face of the plate, and rollers 23 are revolvably mounted thereon, return rollers 24 being set in suitable bearings 25 secured to the side channel members 21 on the underside of the plate 20.

Rollers 26 are provided on one end of each end section, and are mounted in a take-up 27 which is slidably secured to the one end of each end section and we do not deem it necessary to describe this in detail as the take-up can be of any desired construction, such as commonly used for this purpose.

The conveying belt 28 is trained over these end rollers 26 and rides on the rollers
23, the return rollers 24 preventing excessive sagging of the belt.

The conveyor is supported by means of cable or rope slings 29 suitably anchored at one on each side of the conveyor sections at the points 30, these being trained over the sheaves 13 and 13a which are rotatably mounted on the upper end of the boom 11. The boom is in turn held by cables 31 and 31a, the one end of each cable being secured to an anchor plate 8 carried by the mast, the cable 31a on the far side of the machine leading over and around one of the sheaves 32, which are mounted on the boom, and hence back and around the sheave 33, leading down and around the sheaves 34 and 34a respectively which are mounted on brackets secured to the frame, and thence leading to and being wound on a double drum 35. It will of course be understood that there are two independent cables for supporting each boom. The opposite cable 37 leads around in a similar manner, excepting that it leads down directly over the drum. The opposite boom 11a is handled in an identically similar manner, a similar drum being mounted on the opposite side of the machine.

A worm-wheel 36 is mounted on one end of the drum-shaft, and meshes with a worm 37 to which a crank 38 is secured and it will be obvious that by rotation of the crank 38 the cable 31 will be wound on, or unwound from the drum 35, thereby selectively raising or lowering one of the booms and controlling the angle of inclination of the conveyor accordingly.

For stabilization of the conveyor, rollers 39 are revolvably secured to the reinforcing members 21 on each side of the conveyor, these rollers engaging the flanges 33 and 33a of the upright channels 3 and 4 which form the mast.

The conveyor is driven by means of the motor 9, which is provided with a drive pulley 9a in the usual manner, this being geared to a pulley 40 mounted on the transversely disposed shaft 10 which is carried in suitable bearings secured to the frame, a smaller pulley 42 is also mounted on the said shaft. A frame 43 is pivotally connected to this shaft 10, the opposite end thereof being provided with bearings 44 in which the shaft 45 is mounted, pulleys 46 and 47 being mounted on the said shaft, this shaft being driven by a belt 48 connecting the pulleys 42 and 46. A similar frame 49 is pivotally connected to a shaft 50 set in suitable bearings in the brackets 51 which are secured to the section 15; a pulley 52 is also mounted on this shaft 50 and is driven by means of a belt 53 connecting the pulleys 47 and 52. A drive roller 54 is mounted on this shaft 50 and spaced apart from idler rollers 55 and 56 are also journaled in the brackets, the conveyor belt leading around the idler 55 thence over the roller 54 and down and around the idler 56. This provides a flexible drive which can be folded with the conveyor, and which delivers the power to the conveyor at the center thereof, and not at the end which is the place where the conventional conveyors are driven, consequently there is no excessive strain on either end of the conveyor due to the drive, and the conveyor can be folded without in any manner affecting the drive.

It will of course be obvious that the rollers 55 and 56 can be either idlers or live rollers as desired, also the belts and pulleys can be satisfactorily replaced by chains and sprockets, all of which falls within the scope of our invention.

From the foregoing description it will be obvious that we have perfected a very efficient, economical and substantial portable foldable conveyor for conveying and elevating materials of a granular nature.

What we claim is—

1. The combination with a wheeled frame provided with spaced apart vertically disposed members, booms secured to each respective end of said frame, a sectional foldable conveyor interposed between said vertically disposed members, and supported by said boom, and guides on the conveyor for engaging said members and preventing longitudinal movement of the conveyor.

2. The combination with a wheeled frame provided with spaced apart vertically disposed mast members, a sectional foldable conveyor interposed between said members, guides thereon and slidably vertically on said mast members, means pivotally connected to each respective end of the frame for changing the angle of inclination of said conveyor when in unfolded position, and means for driving said conveyor.

3. The combination with a wheeled frame provided with spaced apart vertically disposed members, a vertically adjustable foldable conveyor interposed between and engaging said members, foldable slings secured to the conveyor intermediate its length and pivoted booms having sheaves thereon for engagement by the slings for supporting said conveyor, means for adjusting said booms, and a flexible drive for driving the conveyor.

4. The combination with a wheeled frame having a mast comprising spaced apart members secured thereto, pivoted booms on opposite ends of the frame, a foldable conveyor interposed between said members, guides thereon and slidably vertically on the mast, cable slings anchored to the conveyor and adapted to engage said booms for flexibly supporting said conveyor, and means for adjusting said booms.

5. The combination with a wheeled frame
having spaced apart vertically extending members secured thereto and forming a mast, booms pivotally secured to the front and rear of the frame, a foldable conveyer interposed between said mast members, means on the conveyer and engaging said booms for flexibly supporting said conveyer, rollers on the conveyer for engaging the said mast members, and a foldable drive connected to said conveyer.

6. The combination with a wheeled frame having spaced apart vertically extending members secured thereto and forming a mast, booms pivotally secured to the end of the frame, a foldable conveyer interposed between the mast members, cables anchored to individual conveyer sections to form slings for engagement by the booms for supporting said conveyer, and a foldable drive for driving said conveyer.

7. The combination with a wheeled frame having spaced apart vertically extending members secured thereto and forming a mast, booms pivotally secured to the ends of said frame, a foldable conveyer interposed between said mast members and carried by said booms, rollers on the conveyer for engaging the mast, and a flexible drive for actuating said conveyer.

8. The combination with a wheeled frame having spaced apart vertically extending members forming a mast, booms pivotally secured to the ends of the frame, a foldable conveyer interposed between the mast members and supported by said booms, means for vertically adjusting said conveyer, and a foldable drive connected at the center thereof.

9. The combination with a wheeled frame having spaced apart vertically extending members, a foldable conveyer interposed therebetween, booms pivotally secured to the ends of the frame and having flexible connection therewith said conveyer, a foldable drive connected to the conveyer at the center thereof, rollers on the conveyer engaging said mast drums mounted on the wheeled frame and cable connections between the booms and the drums for adjusting said conveyers.

In testimony whereof we affix our signatures.

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