

(No Model.)

2 Sheets—Sheet 1.

J. R. COOPER.
STRAW STACKER.

No. 482,080.

Patented Sept. 6, 1892.

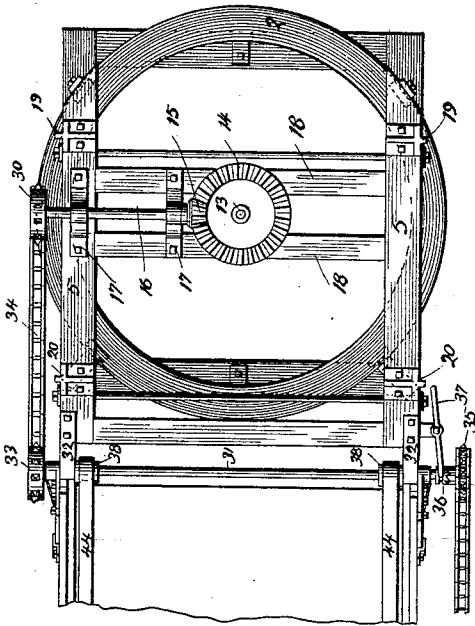


Fig. 1

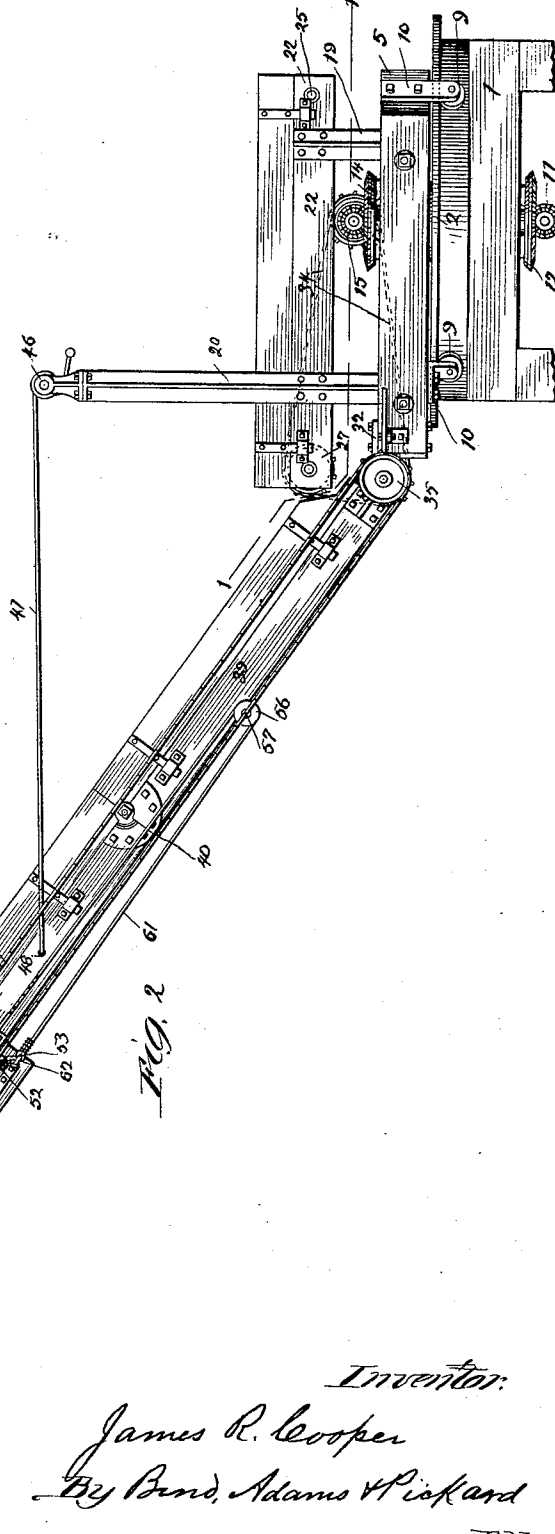


Fig. 2

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Attys

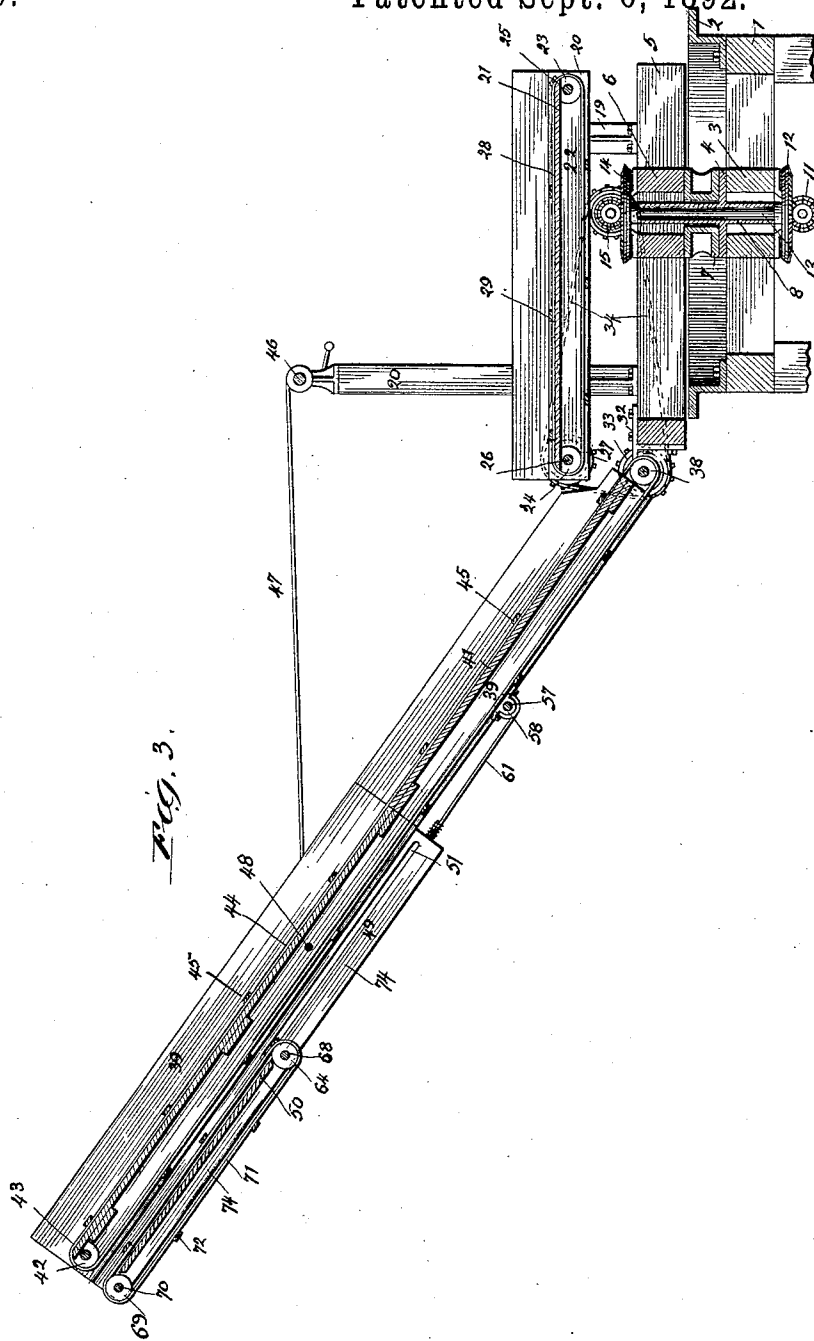
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Witnesses.

Fred. A. Miles.

Julia M. Bristol.

Inventor.

James R. Cooper

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UNITED STATES PATENT OFFICE.

JAMES R. COOPER, OF SUGAR GROVE, ILLINOIS.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 482,080, dated September 6, 1892.

Application filed April 26, 1892. Serial No. 430,794. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. COOPER, a citizen of the United States, residing at Sugar Grove, in the county of Kane and State of Illinois, have invented a certain new and useful Improvement in Straw-Stackers, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a partial top or plan view. Fig. 2 is a side elevation, and Fig. 3 is a central longitudinal vertical section.

My invention relates to improvements in straw-stackers; and its object is to provide a means whereby the straw may be taken from the separator, carried away, and deposited upon the stack, and at the same time to make the height of the stacker adjustable, so that it may be readily changed as the stack is built and adjusted to the increasing height of the stack. At the same time the object of my invention is to improve the construction and operation of stackers in general. I attain these objects by means of the devices described in the following specification, and illustrated in the drawings.

That which I regard as new will be pointed out in the claims.

In the drawings, 1 indicates a frame constructed, preferably, of timbers and adapted to be bolted or otherwise fastened to the end of a separator.

2 indicates a circular track, bolted or otherwise secured to the top of the frame 1.

3 (see Fig. 3) indicates a standard, preferably made of cast-iron or some other suitable material and in two pieces, as shown.

The numeral 8 represents a sleeve which extends upward from the circular top 4 through the standard 6 and downward therefrom through the standard 3, as shown in Fig. 3.

9 indicates wheels journaled to suitable supports 10, extending downward from the under surface of the frame 5. (See Fig. 2.) The wheels 9 are adapted to bear against the under surface of the circular track 2. The standards 3 and 6, with their circular plates 4 and 7, are so mounted in the framework 1 and the frame 5 as to form, in connection with the circular track 2 and the wheels 9, a turntable whereby the frame 5 may be rotated.

11 indicates a beveled gear-wheel carried upon a suitable shaft in such a way that it may be driven by the same power that operates the separator.

12 indicates a beveled gear-wheel mounted upon the lower end of a vertical shaft 13. The teeth of the beveled gear-wheel 12 are adapted to mesh with the teeth of the beveled gear-wheel 11. The vertical shaft 13 is mounted in the sleeve 8 of the circular top 4 and extends upward through it.

14 indicates a beveled gear-wheel mounted upon and keyed to the upper end of the shaft 13.

15 indicates a beveled gear-wheel keyed to a horizontal shaft 16, which is journaled in suitable bearings 17, mounted upon the upper surface of the cross-timbers 18 of the frame 5. The teeth of the beveled gear-wheel 15 are adapted to mesh with the teeth of the beveled gear-wheel 14.

19 and 20 indicate uprights of any suitable material, which are bolted or otherwise secured to the upper surface of the frame 5 and project upward vertically therefrom.

21 indicates a table carried upon side pieces 22. The side pieces 22 are bolted or otherwise secured to the uprights 19 and 20.

23 and 24 indicate pulleys mounted upon shafts 25 and 26, (see Fig. 3,) which are journaled in the side pieces 22 and pass across from side to side. The shaft 26 passes through beyond the outside of the side pieces 22 upon one side, so as to permit mounting upon it of a sprocket-wheel 27, which is keyed to the shaft 26.

28 indicates conveyer-belts carrying cross-pieces 29. The belts 28 pass around the pulleys 23 and 24, one side being below and the other above the table 21, to form a conveyer for the straw.

30 indicates a sprocket-wheel mounted upon and keyed to the outer end of the shaft 16.

31 indicates a shaft journaled in suitable bearings 32. The bearings 32 are bolted or otherwise secured to the top of the frame 5.

33 indicates a sprocket-wheel mounted upon and keyed to the end of the shaft 31.

34 indicates a sprocket-chain which passes around the sprocket-wheels 30, 27, and 33, so that when the shaft 16 is rotated the shafts 26 and 31 will be rotated with it.

35 indicates a sprocket-wheel loosely mounted upon the end of the shaft 31 opposite to the end which carries the sprocket-wheel 33.

36 indicates a clutch of the ordinary construction, feathered upon the shaft 31 and operated by a lever 37, so as to engage the sprocket-wheel 35 and cause the same to rotate with the shaft 31 when desired.

38 indicates pulleys keyed upon the shaft 31 inside of the bearings 32.

39 indicates an elevator-frame which is hinged at its lower end upon the frame 5, so as to permit its outer end to be moved vertically. The elevator-frame 39 I prefer to hinge, as shown at 40, for convenience in storing.

41 indicates a flooring formed of wood or other suitable material, supported by the elevator-frame 39 and extending across from side to side.

42 (see Fig. 3) indicates pulleys mounted upon and keyed to a shaft 43. The shaft 43 is journaled in the elevator-frame 39 and extends across from side to side.

44 indicates conveyer-belts which pass around the pulleys 38 and 42 above and below the flooring 41 and carry cross-pieces 45, which extend across inside the elevator-frame 39 nearly from side to side, but so as to move freely therein to adapt it to convey the straw. The standards 20 project vertically upward a suitable distance above the table 21 and its framework and carry a shaft 46, which is journaled at each end in suitable bearings at the tops of the standards 20.

47 indicates a rope which passes through suitable openings 48 in the elevator-frame 39. Each end of said rope 47 is fastened to the shaft 46 and is adapted to be wound up by the rotation of the shaft 46 in such a way as to raise the elevator-frame 39 to any desired height by winding up said rope upon the said shaft 46.

The shaft 46 is provided at one end with a ratchet-wheel and pawl of the ordinary construction to prevent its being rotated by the weight of the elevator-frame 39, so as to unwind the rope 47. The ratchet and pawl being of the ordinary construction, are not shown.

49 indicates the side pieces of a sliding frame 74, composed of the two side pieces 49 and a floor 50 similar to the floor 41. The side pieces 49 are provided with slots 51.

52 indicates pins supported by ears 53, secured to the outside of each of the elevator-frames 39 and depending downward therefrom. The pin 52 is adapted to engage with the slots 51 in the side pieces 49, so as to support the frame 74 below the elevator-frames 39.

54 indicates pulleys journaled to ears 55. The ears 55 are secured upon the outside of each of the elevator-frames 39 near the upper end, and the roller 54 is adjusted to bear upon the under side of the frames 49, so as to support them against the under side of the elevator-frames 39.

56 indicates drums which are mounted upon and keyed to an axle 57, one upon each side of the elevator-frame 39. The axle 57 is journaled in suitable bearings 58, attached to the under side of the elevator-frame 39.

59 indicates pulleys which are journaled to supports 60 upon each side of the elevator-frame 39 at a suitable distance from the upper end of said frame.

61 indicates ropes or cords which are attached at each end to rings 62, secured to the lower ends of the side pieces 49. The ropes or cords 61 pass over the pulleys 59 and are wound around the drums 56. One end of the axle 57 is provided with a winch of the ordinary form, (not shown in the drawings,) adapted to rotate the axle 57 and with it the drums 56 in such a way as to wind the ropes 61 around said drums, so as to raise or lower the sliding frame 74.

63 indicates a sprocket-wheel which is keyed upon the outer end of the shaft 43 upon one side of the elevator-frame 39.

64 indicates a shaft mounted in ordinary bearings, supported by the sliding frame 74 and passing through the same from side to side.

65 indicates a sprocket-wheel which is keyed upon one end of the shaft 64 outside the sliding frame 74 upon the same side as the sprocket-wheel 63.

66 indicates a pin secured to the side piece 49 of the sliding frame 74.

67 indicates an idler sprocket-wheel rotatably mounted upon the pin 66 and outside the frame 74 upon the same side as the sprocket-wheels 63 and 65. The pin 66 is mounted on the sliding frame 74 a short distance below the shaft 64.

68 indicates pulleys mounted upon and keyed to the shaft 64 inside the sliding frame 74.

69 indicates pulleys mounted upon a shaft 70 inside the sliding frame 74. The shaft 70 is mounted in ordinary bearings carried by the frame 74, so as to rotate therein.

71 indicates belts passing around the pulleys 68 and 69 and carrying cross-pieces 72. The belt 71 is so arranged as to pass above and below the floor 50, as is shown in Fig. 3.

73 (see Fig. 2) indicates a sprocket-chain which passes around the sprocket-wheel 35, over the sprocket-wheel 63, under the sprocket-wheel 65, and over the idler sprocket-wheel 67.

The operation of my device is as follows: When the beveled gear-wheel 11 is rotated by the power which drives the machine, it rotates with it the beveled gear-wheel 12 and the beveled gear-wheel 14. The motion thus given is communicated to the beveled gear-wheel 15 and through the shaft 16 to the sprocket-wheel 30. By means of the sprocket-chain 34 the pulleys 23 and 24 are rotated, moving the conveyer-belts 28. The straw from the separator falling upon the table 21 is carried by the motion of the conveyer-belts

28 away from the separator and is deposited upon the floor 41 of the elevator-frame 39. The sprocket-wheel 33 is also rotated by the operation of the sprocket-chain 34, rotating the shaft 31. The sprocket-wheel 35 is thrown into engagement with the shaft 31 by the operation of the clutch 36 and lever 37, causing the sprocket-wheel 35 to be rotated with the shaft 31. By means of the sprocket-chain 73 the sprocket-wheel 63 is rotated, rotating the pulleys 42 and causing the conveyer-belts 44 to be moved in the elevator, so as to carry the straw up to and out of the upper end.

When it is desired to use the sliding frame 74 as the height of the stack increases, the drums 56 are rotated by means of a winch, so as to wind the rope 61, thus extending the sliding frame 74 upward to the desired height. By means of the idler sprocket-wheel 67 the sprocket-chain 73 is kept in engagement with the sprocket-wheel 65. The rotation of the sprocket-wheel 65 would cause the pulleys 68 and 69 to be rotated, carrying around them the conveyer-belt 71, thus carrying the straw upward to the upper end of the sliding frame 74, from which it is deposited on the stack. By means of the turn-table the whole elevator may be swung from side to side to deposit the straw in any desired place, and by rotating the shaft 46, so as to wind up the rope 47, the entire elevator-frame may be raised or lowered to any desired height.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. In a straw-stacker, the combination, with the frame 1, of a circular track carried thereby, the frame 5, having depending rollers engaging said circular track, the standards 3 and 6 in said frames 1 and 5, respectively, the circular top 4, resting on the top of the standards 3 and provided with a sleeve extending upwardly and downwardly therefrom through the standards 6 and 3, a shaft extending through said sleeve, carrying gear-wheels 12 and 14, uprights extending from the frame 5, side pieces supported by said standards, a conveyer traveling between said side pieces, a shaft supported by the frame 5, an elevator mounted to swing on said shaft, a longitudinally-sliding frame carried by said elevator, means for sliding said frame, a rope connected with said elevator and with a windlass carried by one set of the upright standards, pulleys in said elevator and in said longitudinally-sliding frame, conveyers traveling on said pulleys, gear mechanism intermediate

said pulleys and the gear-wheel 14, and means connected with the gear-wheel 12 for driving the conveyer-belts, substantially as described.

2. In a stacker, the combination, with a frame 1, adapted to be secured to a separator, a standard 3, rigidly fixed in said frame 1 and having a smooth circular top 4 and provided with a vertical sleeve 8, extending upward from said standard 3, of a frame 5, a standard 6, rigidly fixed therein and having a smooth circular bottom 7, adapted to rest upon said circular top 4 and to turn thereon, said standard 6 having a circular opening at the center to permit the passage through it of the sleeve 8, side pieces 22, supported above said frame 5 by suitable standards, a table 28, carried by side pieces 22, a bevel gear-wheel 11, mechanism for driving the same, a vertical shaft 13, passing upward through said sleeve 8, a bevel gear-wheel 12, mounted upon the lower end of said shaft 13 and adapted to mesh with said gear-wheel 11, a bevel gear-wheel 14, mounted upon the upper end of said shaft 13, a horizontal shaft 16, a bevel gear-wheel 15, mounted upon the inner end of said shaft 16 and adapted to mesh with said gear-wheel 14, a sprocket-wheel 30, mounted upon the outer end of the shaft 16, a horizontal shaft 26, journaled in said side pieces 22, a sprocket-wheel 27, mounted upon one end of said shaft 26, bearings 32, secured to said frame 5, a horizontal shaft 31, journaled in said bearings 32, a sprocket-wheel 33, mounted upon one end of said shaft 31, a sprocket-chain 34, passing around said sprocket-wheels 27, 30, and 33, pulleys 24, mounted upon said shaft 26, a horizontal shaft 25, journaled in said side pieces 22, pulleys 23, mounted upon said shaft 25, conveyer-belts 28, carried by said pulleys 23 and 24, an elevator 39, hinged to said frame 5, so as to permit of adjustment vertically at its upper end, devices for lowering and raising said elevator 39, a sliding frame 74, carried by said elevator 39 and adapted to be moved longitudinally of said elevator, devices for moving said sliding frame 74, conveyer-belts carried by said elevator 39 and said sliding frame 74, and mechanism for driving said conveyer-belts so as to carry the straw up said elevator 39 and sliding frame 74, substantially as described.

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Witnesses:

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