

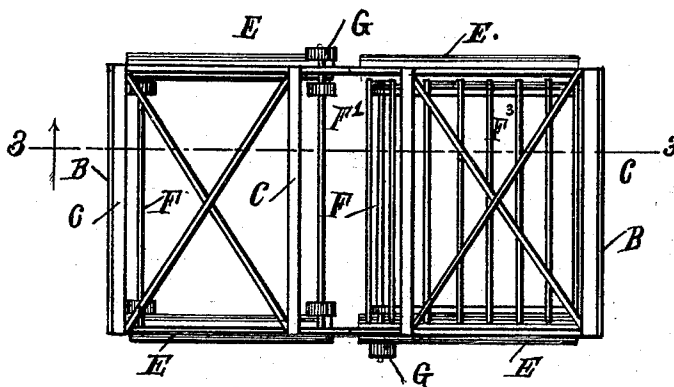
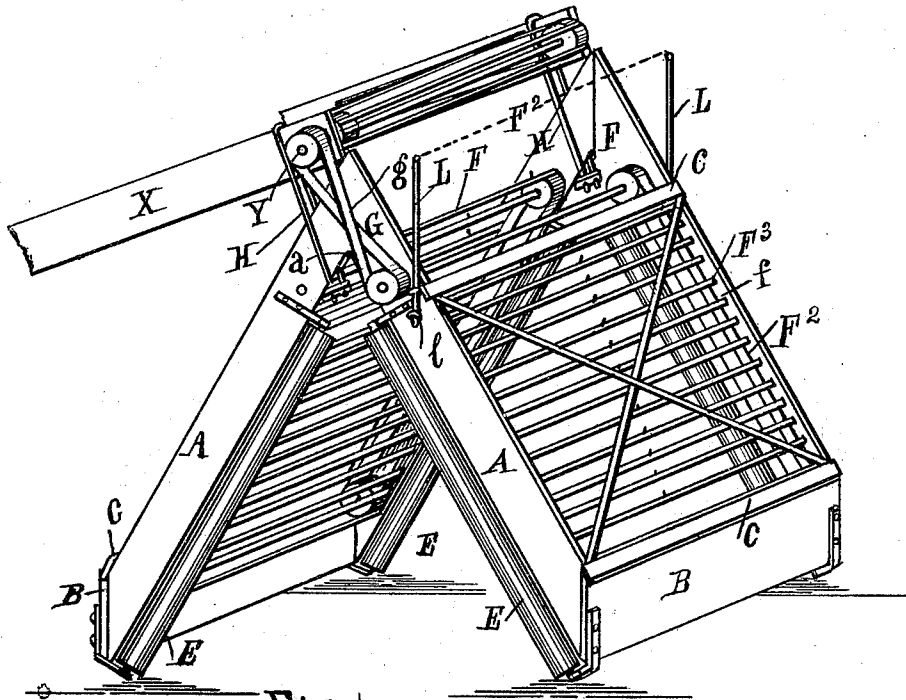
(No Model.)

2 Sheets—Sheet 1.

F. P. RICHARDS.
STRAW STACKER.

No. 513,597.

Patented Jan. 30, 1894.



Witnesses
Thos. M. Cochrane
Jas. A. Bailey.

Frank P. Richards Inventor,
By his Attorney, N. DuBois

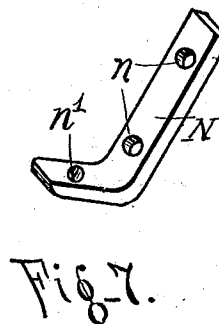
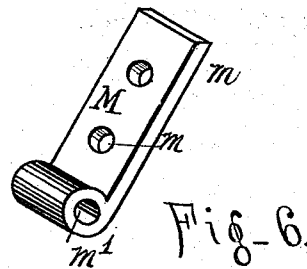
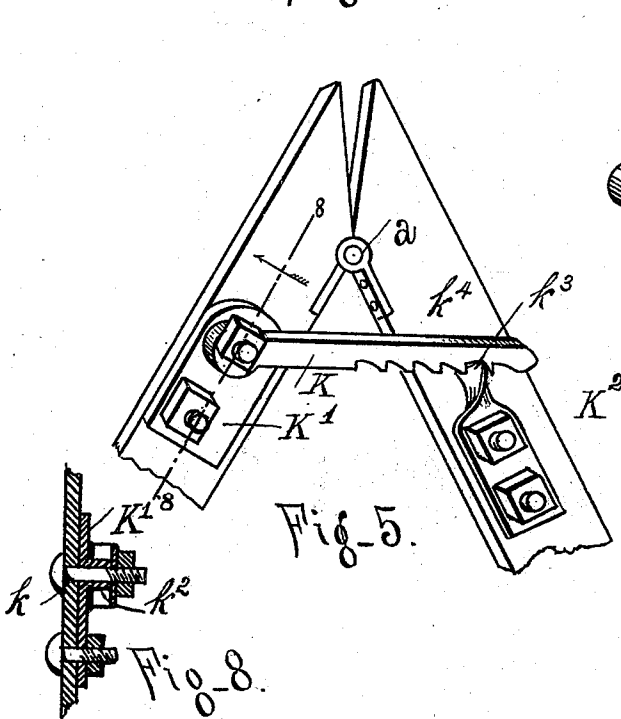
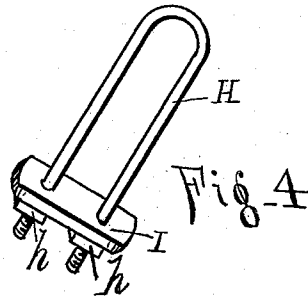
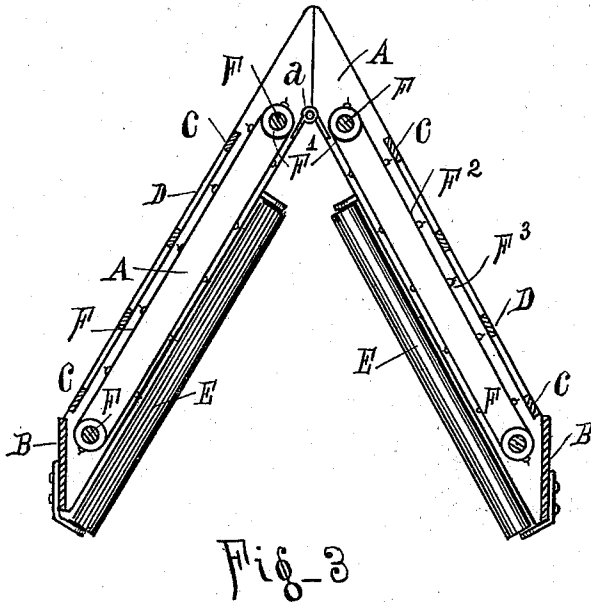
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2 Sheets—Sheet 2.

F. P. RICHARDS.
STRAW STACKER.

No. 513,597

Patented Jan. 30, 1894.



Witnesses
Thos. M. Conrath
Ed. A. Bailey.

Frank P. Richards, Inventor
By his Attorney *N. D. Bois.*

UNITED STATES PATENT OFFICE.

FRANK P. RICHARDS, OF EDINBURG, ILLINOIS.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 513,597, dated January 30, 1894.

Application filed September 23, 1892. Serial No. 446,671. (No model.)

To all whom it may concern:

Be it known that I, FRANK P. RICHARDS, a citizen of the United States, residing at Edinburg, in the county of Christian and State of Illinois, have invented a new and useful Straw-Stacker, which is fully set forth in this specification and the annexed drawings, to which reference is hereby made.

The purpose of my invention is to provide simple and effective means whereby the straw received from the chute or conveyer of a stacker such as is commonly used, may be automatically distributed over the stack and suitably compacted thereon, thereby dispensing with the services of three men on the stack to distribute and compact the straw.

My device may be attached to any of the so called stackers in common use in which the chute that conveys the straw to the stack has an oscillating movement in the arc of a circle.

In practice my device is attached to and oscillates with the chute of the stacker.

My invention is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the stacker connected with the conveyer chute. Fig. 2 is a top view of the stacker detached from the chute, the conveyer on one side being removed so as to show the conveyer shafts. Fig. 3 is a vertical transverse section on the line 3 of Fig. 2. Fig. 4 is an enlarged detached view of the means for connecting the stacker with the chute. Fig. 5 is an enlarged partial detached view of the extension latch by means of which the sides of the stacker are adjusted relative to each other so as to vary the width of the stack. Fig. 6 is an enlarged detached view of one of the upper bearings of the packing rollers. Fig. 7 is an enlarged detached view of one of the lower bearings of the packing rollers. Fig. 8 is a sectional detail view on line 8—8 of Fig. 5.

Similar letters indicate similar parts in all the views.

The main frame consists of two sections joined at their upper ends by hinges as hereinafter described.

The end pieces A are of wood and their form is clearly shown in Figs. 1 and 2. The upper ends of the adjacent end pieces are joined by hinges *a*. These hinges may be of

any convenient and suitable form, but I prefer to use a hinge having a pivotal bolt which may be easily removed when it is desired to separate the sections of the stacker frame for transportation or any other purpose. The lower ends of the end pieces in each part of the main frame are connected by butt boards B, by which the straw is stopped when carried to the foot of the stacker.

Side pieces C connect and strengthen the upper and lower ends of each section of the frame and diagonal braces D further strengthen each section of the frame.

Under and parallel to each end piece and supported in suitable bearings thereon are rollers E which as the stacker oscillates roll upon the straw and compact it in the stack. These rollers in over-riding the successive layers of straw, as they are placed upon the stack by the conveyers, also serve to raise the stacker frame by degrees, as the process of forming the stack proceeds. This is an important feature of the mechanism, for unless some means were provided for automatically raising the stacker frame, the space between the sections of the frame would be soon clogged with straw, the conveyers would be stopped and if the chute continued to carry straw to the stacker, the straw would over run the stacker frame and fall to the ground at the sides of the stack.

Instead of a roller under each end piece of each section of the frame, one roller under the center of each section may be used without departing from my invention. The bearings which I prefer to use at the upper end of the roller consist of a plate M having holes *m*, adapted to receive bolts by which the plate may be secured to the end pieces of the frame and having at its lower end a hole *m'* adapted to receive the spindle of the roller. The bearings which I prefer to use at the lower end of the roller consists of an angle plate N having holes *n* adapted to receive the same bolts by means of which the butt boards B are secured to the end pieces A, and having at its lower end a hole *n'* adapted to receive the lower spindle of the roller. I do not however confine myself to the particular form of bearings described as it is obvious that bearings of different forms may be used without departing from my invention.

Near the upper and lower ends respectively of each section are longitudinal shafts F which are supported in bearings of any suitable and convenient form. Each of these shafts has
 5 near each end, pulleys F' around which run endless belts F^2 . Secured to these belts are equidistant parallel slats F^3 and each of these slats is provided with pins f which when the conveyers are in motion serve to seize the
 10 straw and drag it downward and deposit it upon the stack. If desired the slats may be dispensed with and the pins or their equivalents may be placed upon endless conveyer belts, and in this case it will be necessary to
 15 use only one compacting roller under the center of each section of the frame. The upper conveyer shafts are longer than the lower shafts and one end of each upper shaft projects beyond the end pieces of the frame; and
 20 to the projecting end of each shaft is secured a pulley G which by means of a belt g is connected with and driven by a pulley Y on the chute X .

Vertical standards L are supported by staples l on the end pieces A and a canvas stretched from one standard to the other serves to prevent the straw from being carried over the top of the stacker frame.

The stacker is connected with the chute by
 30 means of a loop H . The lower ends of this loop are threaded and provided with nuts h . A plate I provided with holes to receive the threaded ends of the loop is held in place on the loop by means of the nuts. To connect
 35 the stacker with the chute the loop is so placed that one side of the chute and the adjacent end piece of the stacker are between the members of the loop as shown in Fig. 1. The plate I is then placed upon the lower ends
 40 of the loop and the nuts are placed upon the loop and turned up until the arch of the loop bears on the upper edge of the side pieces of the chute and the plate bears on the lower edge of the end piece of stacker, thus retaining
 45 the parts in proper position relative to each other. I do not however confine myself to the particular form of connection shown, as any other suitable connection by means of which the stacker may be caused to oscillate
 50 with the chute may be used without departing from my invention.

I will now describe the means for adjusting the position of the two sections of the frame relative to each other so as to vary the width
 55 of the stack. Plates K' are secured near the upper end of both end pieces of one section by means of bolts passing through holes k in the plate and through the holes in the integral lugs k' on the plate. The latch K has at
 60 one end a hole k^2 which fits on the lug k' of the plate K' . The lower edge of this latch is notched so as to engage with the edge k^3 of the plate K^2 . Plates K^2 are secured near the upper end of both end pieces of the other section
 65 by means of bolts passing through said end pieces and through holes in said plates. The plates K' , K^2 , are opposite each other so

that the latch K may always occupy an approximately horizontal position, thereby insuring the engagement of the teeth k^4 with
 70 the edge k^3 of the plate K^2 .

It is obvious from the description that the latch will retain the sections in whatever position they may be placed as is clearly shown
 75 in Fig. 4. I do not confine myself to the particular form of latch shown as any other form of latch may be used which will serve to retain the sections in any position in which they may be set.

The operation of the stacker is as follows:
 80 The straw as it is discharged from the thrasher is carried upon an endless conveyer within the chute X up to the upper end of the chute whence it falls into the space between the
 85 upper ends of the endless belt conveyers. The straw is then seized by the conveyers and carried down to the stack. The upper end of the chute X oscillates in the arc of a circle and the stacker being connected with it oscillates simultaneously so that the straw as
 90 distributed in a manner well known will form a stack which is in the form of the arc of a circle. At the beginning of the operation of stacking, the ends of the rollers rest upon the
 95 ground and the rollers turn freely in their bearings so as to facilitate the oscillation of the stacker. As the straw accumulates upon the stack the stacker frame oscillates from one end to the other of the stack, and
 100 the pressure of the rollers compacts the straw upon the stack and as the stack is built up the process of building serves to raise the stacker and this operation is continued until
 the stack is completed.

One of the especial merits of my invention
 105 is that owing to the peculiar form of the stacker, the straw between the sections of the stacker frame is deposited so that as soon as the stacker is raised from the ground a stack topped out and complete except as to height
 110 is formed. This is of great practical advantage as the stack is always in shape to turn water if the operation of stacking is interrupted from any cause whatever.

Another practical merit of my invention is
 115 that the services of men upon the stack to distribute and compact the straw is entirely dispensed with.

Another practical merit of my invention is
 120 that the upper end of the chute is supported on the packer frame thereby lessening the strain upon and facilitating the oscillation of the chute, furthermore the weight of the chute and the stacker being upon the stack
 125 serve to form a stack of superior form and great stability. The width of the stack and the inclination of its sides may be varied by varying the angle of inclination between the two sections of the stacker frame.

I do not lay any claim to the chute nor to
 130 the endless-belt conveyer within the chute as both have been heretofore used.

What I claim as new, and desire to obtain by Letters Patent, is—

1. A straw stacker consisting essentially of an A shaped frame, in combination with and moved by a vibrating chute, said frame being provided with means for automatically distributing and compacting the straw on the stack, as set forth and for the purpose stated.

2. The means for raising the stacker frame as the process of forming the stack proceeds, consisting of an oscillating frame provided with rollers on its under sides, said rollers being adapted to over ride the accumulating straw on the stack; in combination with a chute with which said oscillating frame is connected, conveyers on said frame and means for operating said conveyers, as set forth and for the purpose stated.

3. In a straw stacker, the stacker frame consisting of two sections hinged together at their upper ends, said sections being provided with rollers on their under sides and the angle of inclination between said sections being adjustable, said stacker frame being adapted to be connected with and oscillated by a vibrating chute; in combination with means for carrying the straw to and distributing it upon the stack, as set forth and for the purpose stated.

4. In a straw stacker, the combination of the two sections forming the stacker frame, the hinges joining said sections, the rollers on the under side of said section, the shafts, the pulleys, and the endless-belt conveyers within said sections, the means for operating the conveyers and the means for connecting said frame with the chute, as set forth and for the purpose stated.

5. In a straw stacker the combination of the end pieces of the main frame, the butt boards and the sidepieces connecting said end pieces,

the lower bearing plate secured to the butt boards, the upper bearing plates secured to the end pieces, the rollers journaled in the upper and lower bearing plates, the shafts journaled in the end pieces, the pulleys on said shaft, the belts connecting with pulleys on the chute and driving said shafts, the endless belts connecting the pulleys within the sections of the stacker frame, the slats on said belts, the pins on said slats, the standards detachably connected with the end pieces, the canvas joining said standards and the loop connecting the end pieces with the chute, all co-operating, as set forth and for the purpose stated.

6. In a straw stacker the means for distributing and compacting the straw on the stack consisting of an oscillating frame provided with conveyers adapted to carry the straw downward and provided with rollers parallel to the ends of said conveyers, adapted to compact the straw upon the stack; in combination with means for oscillating said frame and means for operating said conveyers, as set forth and for the purpose stated.

7. The combination of an oscillating chute and a stacker frame connectible with said chute, said frame being provided with means for distributing and compacting the straw on the stack and being adapted to rise as the building of the stack progresses, as set forth and for the purpose stated.

In witness whereof I have hereunto subscribed my name, at Springfield, this 7th day of September, 1892.

FRANK P. RICHARDS.

In presence of—

TAD A. BAILEY,
H. BRANDON.