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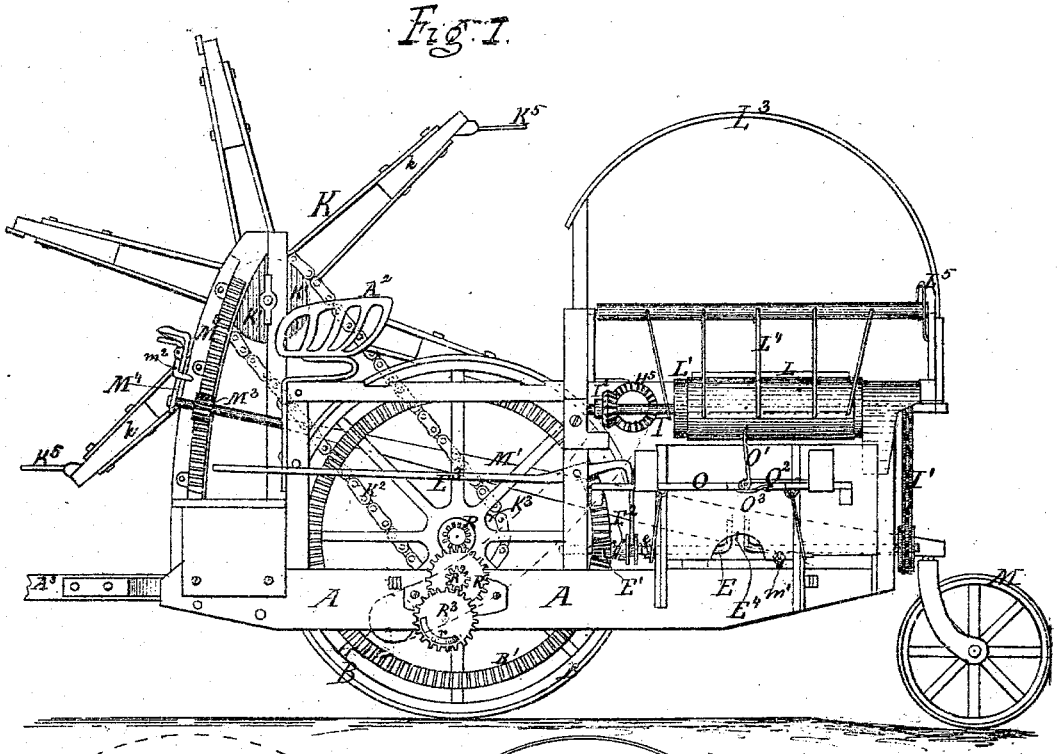
J. M. McKesson,

Grain Binder.

No. 112,267. Patented. Feb. 28. 1871

Fig. 1.



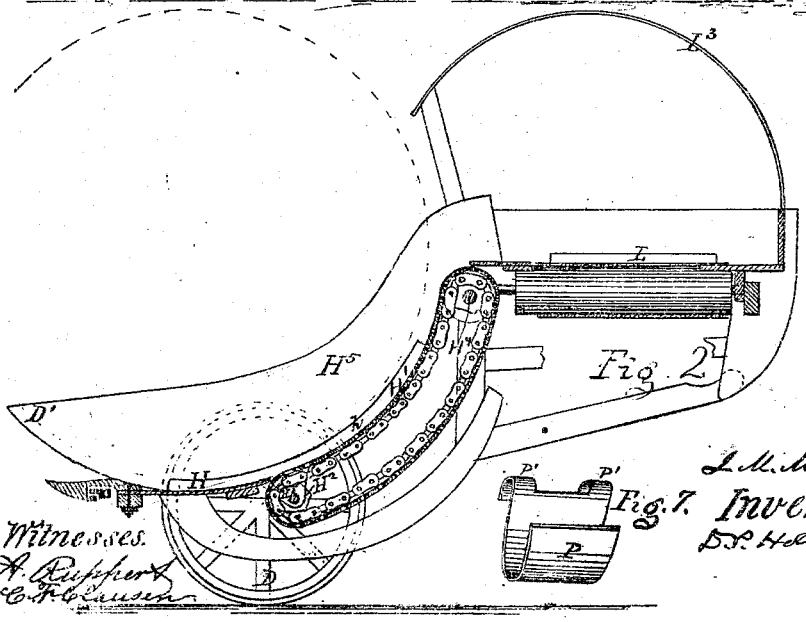


Fig. 2.

Fig. 7.

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Sheet. 2. 3 Sheets.

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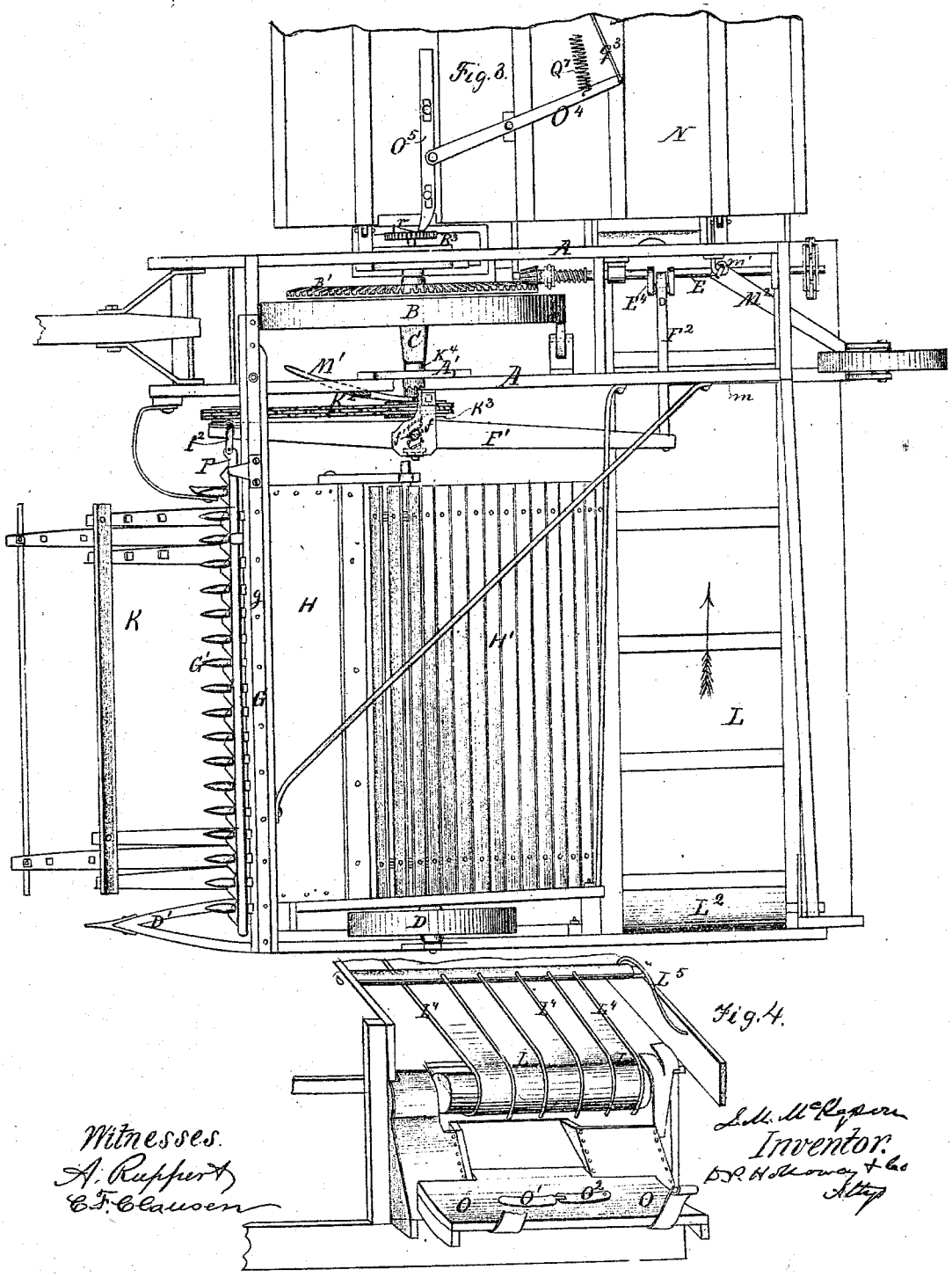

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Sheet 3. 3 Sheets.

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Grain Binder.

No. 112,267. Patented. Feb. 28. 1871.

Fig. 5.

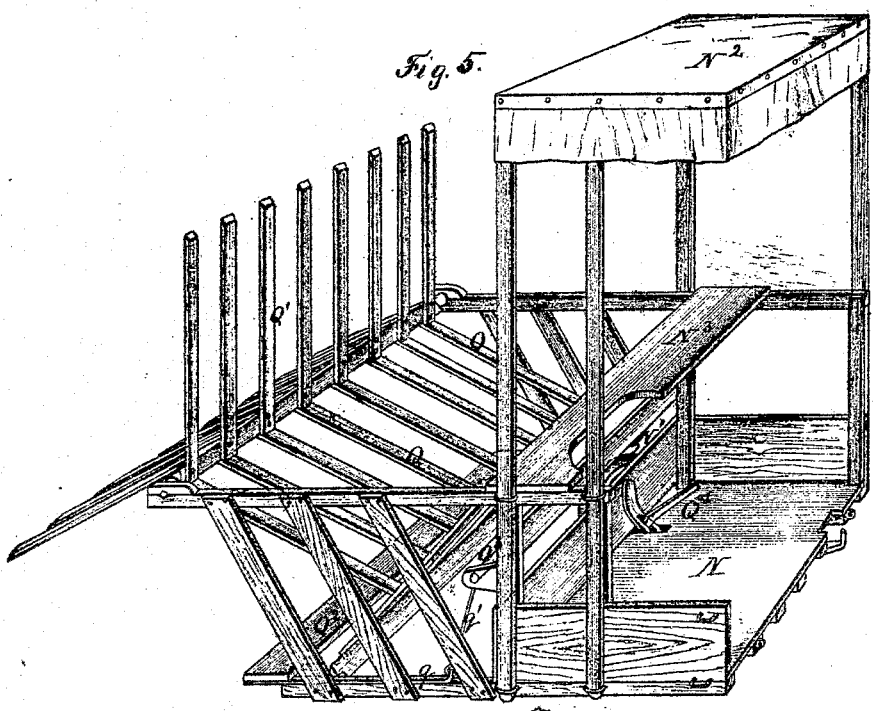
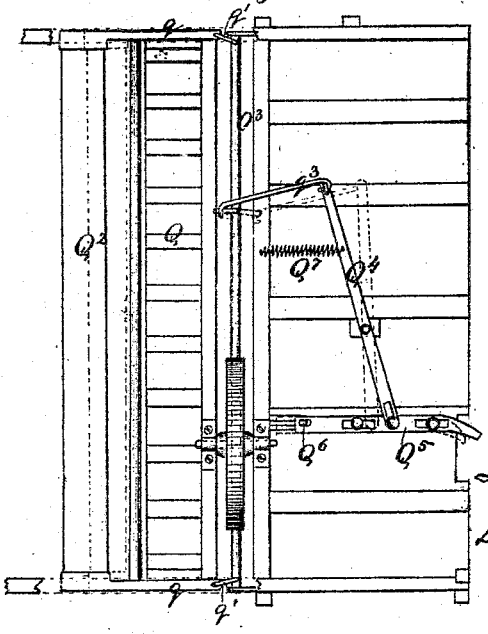


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN M. McKESSON, OF LINCOLN, NEBRASKA.

IMPROVEMENT IN COMBINED HARVESTER AND BINDER.

Specification forming part of Letters Patent No. **112,267**, dated February 28, 1871.

To all whom it may concern:

Be it known that I, JOHN M. McKESSON, of Lincoln, county of Lancaster, and in the State of Nebraska, have invented some new and useful Improvements in Combined Harvester and Binder; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side elevation of my improved machine without the binder-car. Fig. 2 is a vertical longitudinal section through the grain-platform and conveying-apron. Fig. 3 is a bottom view, showing a portion of the binder-car. Fig. 4 is a perspective view of a detached portion of the machine, showing the inner end of the conveying-apron and the receiver into which the gavel is discharged to be bound. Fig. 5 is a perspective view of the binder's car, detached. Fig. 6 is a bottom view of part thereof. Fig. 7 is a perspective view of the trough in which the binding material is carried.

The same letters of reference, where employed in the different figures, denote identical parts.

This invention relates to grain harvesters provided with a binder's car.

My improvements consist in the details of construction and arrangement of various parts of the machine, which will be more specifically pointed out in the subjoined description and claims.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The main frame, marked A in the annexed drawings, is constructed of strong timbers firmly bolted together, of rectangular shape, and hung upon the journals of the axle C of the supporting-wheel B by means of stout hangers A^1. It is provided with a driver's seat, A^2, and a draft-pole, A^3, pivoted to its forward end, about in line with wheel B.

The frame-work for the support of the grain-platform and conveying-apron, and their operative mechanisms, is rigidly secured to the main frame A, and may be of substantially the form shown. The outer side of the grain-platform is supported upon a small wheel, D′, and also provided with the ordinary divider D.

B′ is a large bevel-wheel, fastened upon one side of the driving-wheel B, and gearing into a small bevel-pinion, E^1, hung loosely upon the shaft E. The bevel-pinion is provided with projections upon its hub adapted to engage with a sliding clutch-box, E^2, which latter is arranged upon the main shaft by a feather or spline, and thrown in and out of gear by the driver by means of an elbow-lever, E^3, which is fulcrumed on the main frame. To assist in throwing the clutch-box in gear I employ a spiral spring, *e*, encircling the shaft and bearing with one end against a shoulder thereon, and with the other against the rear of the clutch-box. It will be understood that the shaft is revolved only when the clutch-box is in gear with the projections of the bevel-pinion.

At E^4 the shaft E is provided with a crank, and by means of it drives the cutter-bar F through the pitman F^2 and vibrating arm or lever F^1. The latter oscillates on a stud, *f*, secured to a lug, f^1, projecting from the main frame, and is connected at its forward end to the cutter-bar by a link, f^2, and at the rear end attached by a suitable joint to the pitman F^2.

The finger-bar G is made of wood, strengthened by iron bars *g g*, placed upon its upper and under side, and firmly bolted thereto by the bolts which secure the fingers G′.

A portion, H, of the grain-platform, directly in rear of the finger-bar, is made permanent, as shown, but the larger part, H^1, is constituted of an endless apron, composed of slats and endless chains, upon which the former are fastened, the whole arranged to revolve over suitable sprocket-wheels H^2 H^2, which are mounted upon transverse shafts H^3 and H^4.

By reference to Fig. 2, it will be seen that the grain-platform is concave upon its upper surface, gradually rising from the finger-bar upward to its rear end, which is on a level, or nearly so, with the upper surface of the conveying-apron. Thus, it forms the segment of a circle, or nearly so, having the axis of the reel as its center.

To preserve the concavity of the apron part of the platform, the ends of its slats with the

chains project and travel under the lower edge, or a casing thereof, of the permanent segmental side-board H^5 of the platform, which may be lined with metallic strips *h*, or armed in other suitable manner, to prevent too rapid wear.

The apron H^1 is driven by the upper shaft H^4, which extends behind the main frame, and carries at its overhung end a bevel-wheel, H^5. The latter is driven by a bevel-wheel, I^2, upon the shaft I, which is arranged at right angles to the shaft H^4, and above, and parallel to, the shaft E, from which it derives its motion through an endless chain, I^1, passing over sprocket-wheels on the respective shafts, as indicated in Fig. 1.

If preferred, motion may be communicated from the main shaft to the shaft I through intermediate gear-wheels.

K represents the reel. Its shaft is supported at its outer end in a suitable bearer, erected on the frame-work of the grain-platform, and at its inner end in bearings on a post on the main frame. It is driven directly from the driving-axle through the medium of sprocket-wheels K^1 on the former, and K^3 on the latter, and an endless chain, K^2. The sprocket-wheel K^3 is arranged to revolve loosely upon its axle, and can be slid longitudinally on the same by means of a shifting-lever, which is pivoted on the frame, and extends forward to within convenient reach of the driver.

The hub of the sprocket-wheel is constructed with teeth, which engage with a clutch-box, K^4, fastened permanently on the axle. A spiral spring bears against the opposite side of the sprocket-wheel, to assist in throwing it into gear with the clutch-box.

Two of the radial reel-arms are provided with rake-floats K^5, which, by their shanks *k*, are adjustably secured between the two bars, which constitute the reel-arm, in such a manner that the rake-heads can be drawn in to prevent them from raking the grain off of the platform.

In thick grain both floats will be used; but in thin grain only one of them will be employed as a rake.

The reel-floats are also adjustably arranged between the bars of the reel-arms, so that they may be projected or drawn in, as the height of the grain may require.

At each revolution of the reel one or two gavels of grain, as the case may be, will be raked off the platform by the rake-floats, and assisted by the revolving elevating-apron H^1 of the platform, delivered upon the conveying-apron L, which is arranged directly in rear of platform, extending transversely across the machine to the outer side of the main frame. This conveying-apron is stretched over rollers or drums L^2 and L^1, the latter being firmly secured upon the shaft I, by which the apron is thus moved, traveling in the direction of the arrow, away from the standing grain.

To prevent the grain from being blown off during its transit from the platform to the binder's car, the conveying-apron is protected from the wind by a canvas cover, L^3, stretched over suitable bows, in the manner shown.

L^4 represents fingers, arranged upon a shaft near the outer end of the conveying-apron in bearings upon the side boards of the frame-work, as shown in Fig. 4. These fingers overhang the end of the apron, and serve to guide the cut grain into the receiver below it, and their shaft is attached to a spring, L^5, which holds it in the proper position, but permits of a partial rotation, that the fingers may yield to the pressure of the grain and allow it to drop

The rear end of the machine is supported upon a small swiveling wheel, M, which is attached by a suitable clip to the end of a long lever, M^1, and a shorter swinging arm, M^2. Both the lever and arm are linked to the main frame A at the rear portion, the former at *m* and the latter at *m'*. The lever M^1 extends to the forward end of the machine, and terminates in a metallic socket, in which a short shaft is arranged to revolve, projecting a sufficient distance from the socket to receive at its extreme end a crank, M^4, and a pinion, M^3. The latter gears into a segmental rack, M^5, secured upon a post on the frame near the driver's seat, so that by turning the crank in one direction or the other the lever will be turned on its fulcrum, and thus elevate or depress the swivel-wheel M, whereby the entire machine is tilted on its wheels B and D, so as to elevate or lower the cutter-bar, as may be required. The back of the rack M^5 serves as a guide for a hook formed on the socket of the lever, by which means the pinion is held in gear with the rack. A dog, M^2, hinged to the crank, is employed to hold the lever at any desired elevation.

The lever M^1 may be operated by means different from those just described, which will readily suggest themselves to the mind of an intelligent mechanic.

The machine is complete with the above parts where the grain is to be dropped in gavels upon the ground, and afterward bound and shocked by binders following it. But I have made provision for the attachment of a car upon the side of the machine farthest from the standing grain, for the reception of the gavels, to have them bound in such car, and discharged from the same in numbers sufficient to form a shock. This binder-car, marked N, is hinged to the side of the main frame, so that it may be readily detached, extending under the conveying-apron. The outer side is supported upon a small wheel, N^1, as shown in Fig. 5. Over the body of the car an awning, N^2, is suspended upon posts, to screen the binders from the rays of the sun, and it also has a table, N^3, extending from end to end, upon which the gavels are bound.

The binder's car can accommodate itself to the uneven surface of the ground independent of the movements of the main frame; and, being attached to the latter upon the side oppo-

site the reciprocating sickle and grain-platform, has a tendency to prevent the side draft.

The gavels of grain drop from the conveying-apron into the receiver O, suspended below it on the main frame, and detachably hinged to the latter. In the bottom of this receiver, which may be constructed as clearly shown in Fig. 4, a finger, O^1, is arranged, pivoted upon a pin between ears of metallic plate O^2. The hub of the finger is made eccentric, and pressed upon by a spring, O^3, underlying it, which will press the finger firmly down into its seat upon the bottom of the receiver, as shown in Fig. 4, as well as hold it in the erect position when turned up, as shown in Fig. 1. The band or strand for binding the gavel is placed across the receiver under the finger, which holds it firmly in place, and on removing the gavel the finger will be thrown up so that another band may be placed under it.

P represents a short trough, which is hung by its hooks P′ upon a bar of the main frame, and intended to carry the straw used for the binding of the gavels of grain.

The binding is completed by the binders, of whom two or more may be employed, upon the table N^3, and thence the sheaves are dropped into a hopper, Q, arranged upon the outside of the car. The inner side of the hopper, composed of slats inclining from the table downward and outward, and its ends are permanently secured to the car. Its outer side is formed by one wing or the other of a revolving frame, Q^1, which is journaled in bearings upon the top bars of the ends of the hopper.

This frame is composed of a triangular axis, upon each side of which are bolted a series of slats, so as to form it with three wings, the slats or bars of each wing being made of the proper length to extend to and be supported upon the sliding bottom of the hopper. This bottom Q^2 is provided with an arm, q, at each end, which arms are linked to the cranks q^1 q^1 of a rock-shaft, Q^3. At q^2 the rock-shaft carries another arm or crank, which is connected by a rod, q^3, to an oscillating lever, Q^4, pivoted upon a stud under the bottom of the car, and attached at its opposite end to a sliding bar, Q^5. One end of the latter is attached to a foot-lever, Q^6, which extends upward through the bottom of the car.

Whenever a sufficient number of sheaves have been collected in the hopper to form a shock, one of the binders presses upon this foot-lever, which, through the sliding bar, oscillating-lever, and connecting-rod, oscillates the rock-shaft in such manner as to cause the bottom of the hopper to be drawn inward from under the wing of the revolving frame Q^1, resting upon it. The weight of the sheaves pressing upon or against the wing, will at once turn the frame on its axis, and the sheaves will be discharged, while at the same time another wing of the frame is brought into position to form the side of the hopper, the sliding bottom having in the meanwhile been projected again, on releasing the foot-lever, by the action of a spring, Q^7.

I have provided a means by which the sliding bottom of the hopper may be operated automatically. This is accomplished by a train of wheels, R^1 R^2 R^3, driven by a pinion, R, upon the driving axle, which wheels are arranged on the side of the main frame, directly opposite the inner end of the sliding bar Q^5. The face of the last wheel R^3 is constructed with a cam, r, which, at each revolution of said wheel, pushes the sliding bar Q^5 outward, to draw the hopper bottom from under the wing of the revolving frame. The speed of the wheel R^3 with reference to the reel will be such that during each revolution of the former about twelve gavels of grain will be delivered to the binders.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the concave elevating-apron H^1 of the segmental grain-platform, and the rake-floats K^5 of the reel, by the combined action of which the cut grain is elevated.

2. The spring-finger O^1 O^3, in combination with the receiver O, substantially as and for the purpose set forth.

3. The revolving frame Q^1 and sliding bottom Q^2 of the hopper Q, in combination with the operating mechanism, composed of the cranked rock-shaft Q^3, connecting-rods q and q^3, oscillating lever Q^4, sliding bar Q^5, and spring Q^7, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN M. McKESSON.

Witnesses:
WM. M. LUFF,
GEO. A. FOLLANSBEE.