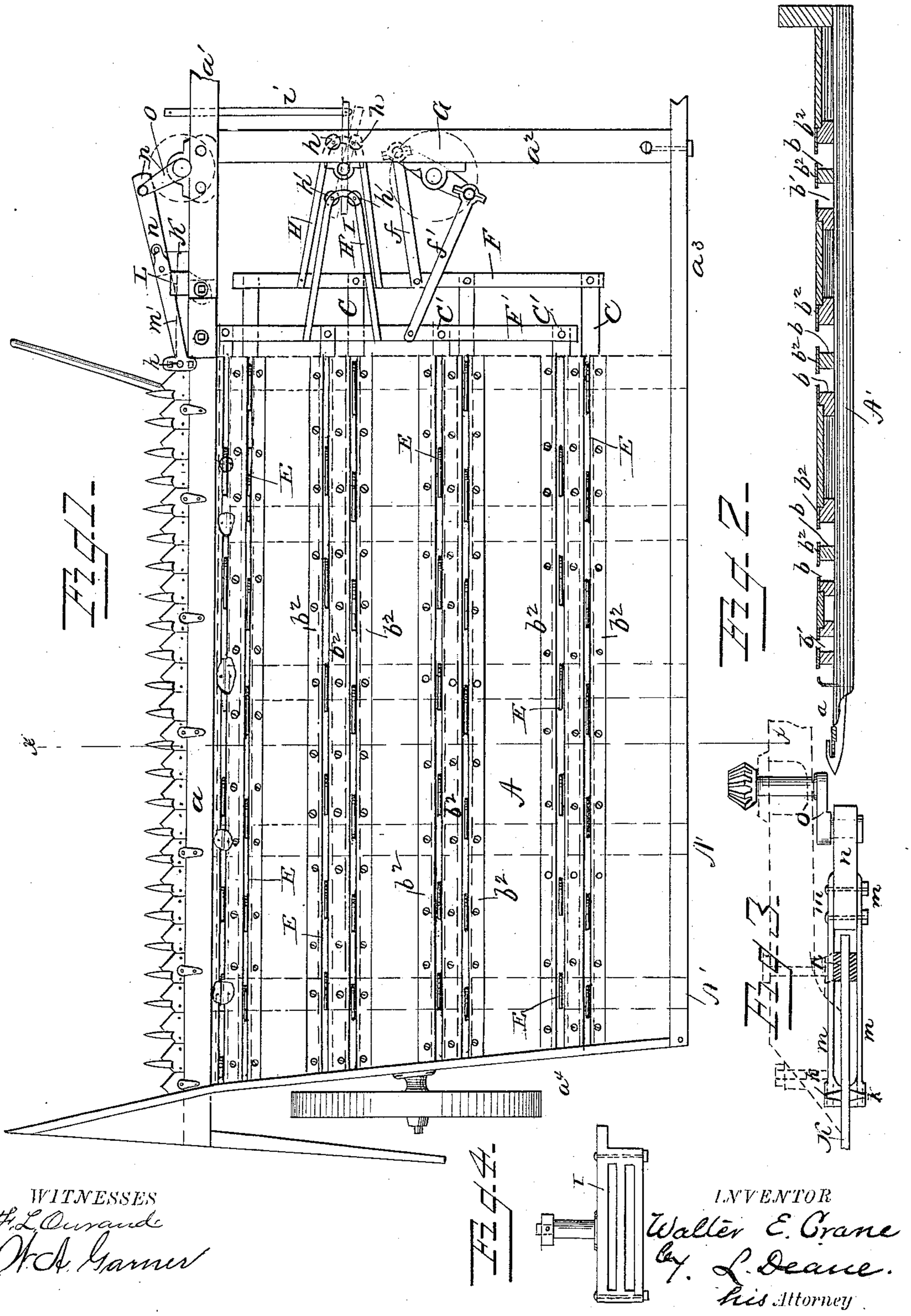
(No Model.) 2 Sheets—Sheet 1.

W. E. CRANE.

HARVESTING MACHINE.

No. 291,987. Patented Jan. 15, 1884.



WITNESSES
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5

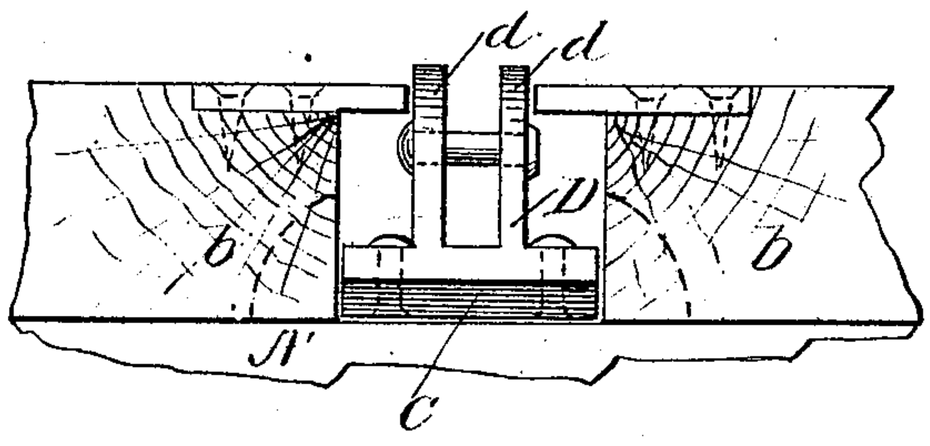


Fig. 6

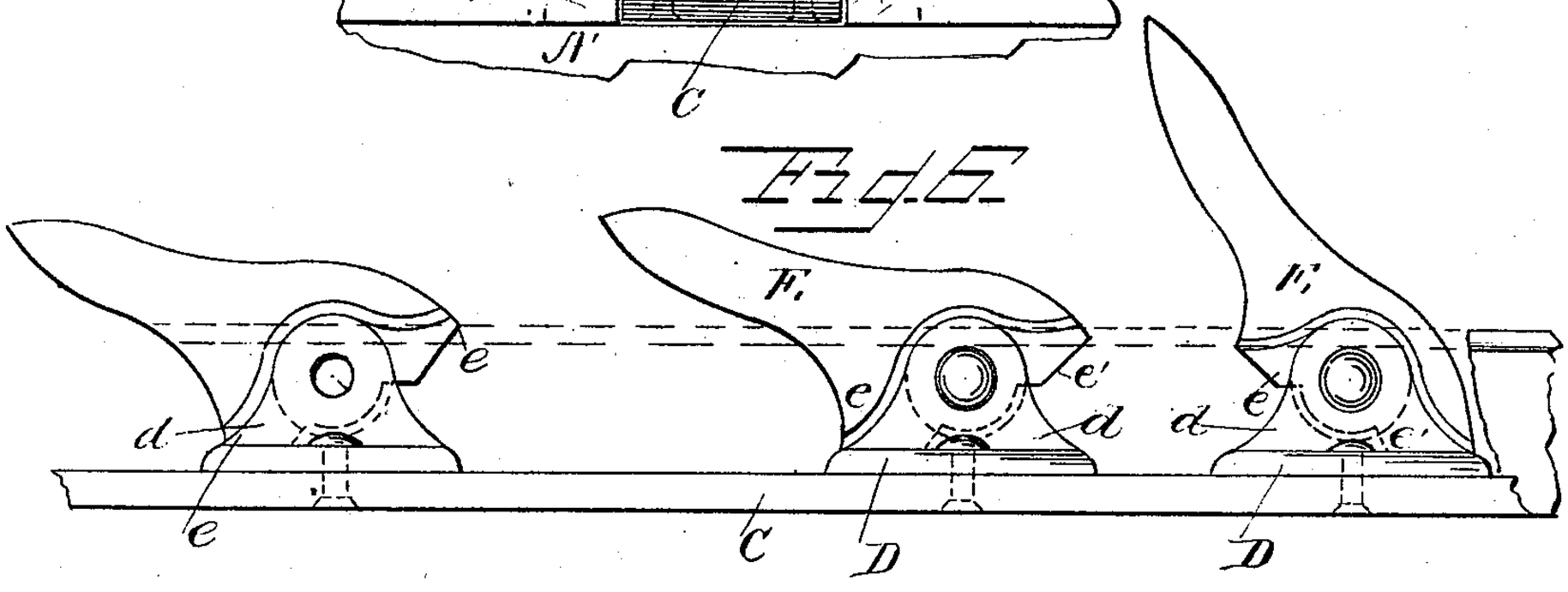


Fig. 7

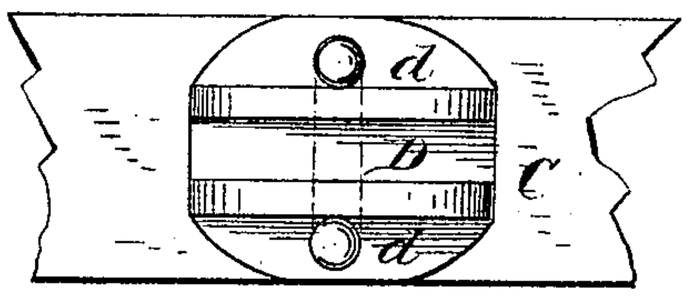


Fig. 8

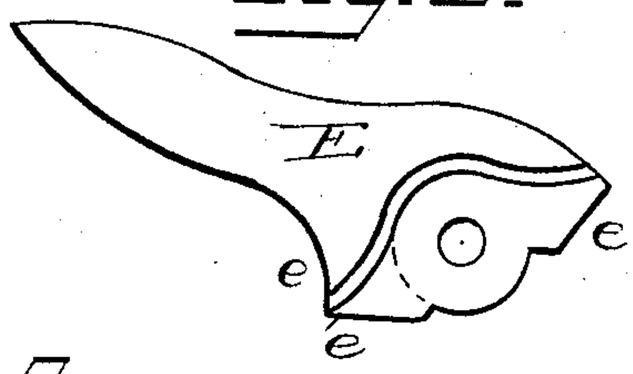


Fig. 9

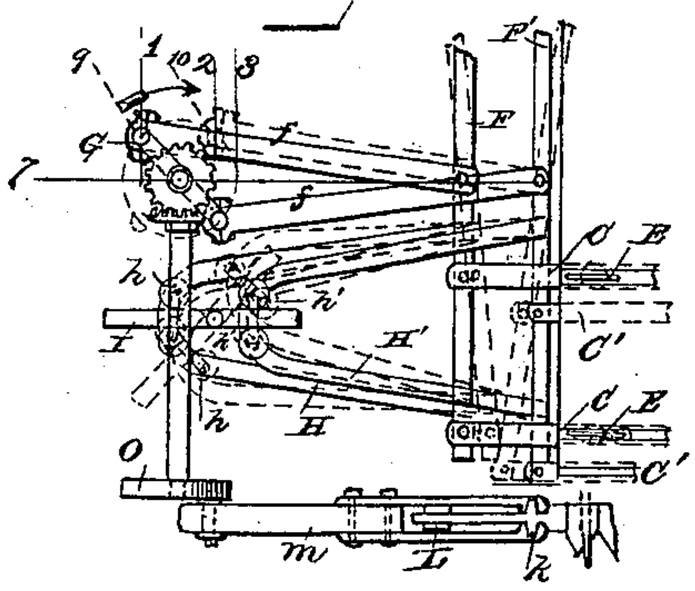


Fig. 11

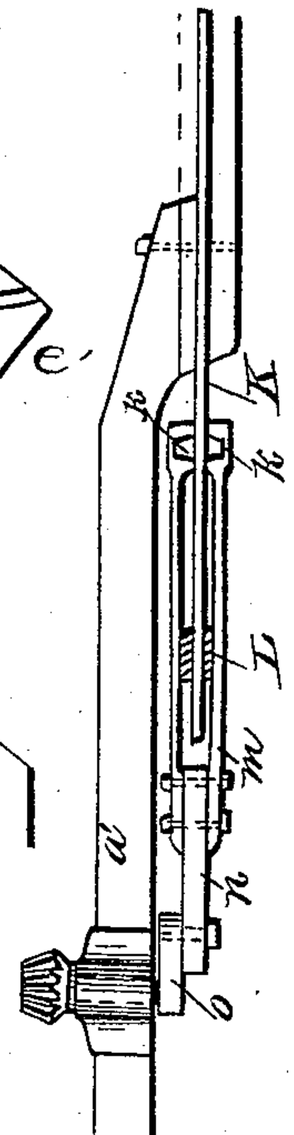
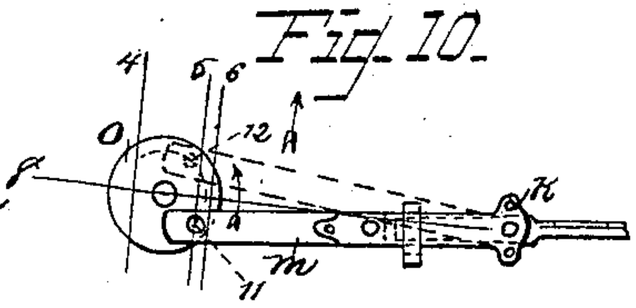


Fig. 10



WITNESSES
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UNITED STATES PATENT OFFICE.

WALTER ELIPHALET CRANE, OF WASECA, MINNESOTA.

HARVESTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 291,987, dated January 15, 1884.

Application filed September 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, WALTER E. CRANE, a citizen of the United States, residing at Waseca, in the county of Waseca and State of Minnesota, have invented certain new and useful Improvements in Harvesting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a plan view of the platform of a harvesting-machine; Fig. 2, a sectional elevation on line *x x* of Fig. 1. Fig. 3 is an elevation, partly in section, of the sickle-head and guide, the pitman and crank-shaft; Fig. 4, a sectional elevation of the carrier-adjuster. Fig. 5 is a detail in section, and shows how the carriers are placed in the platform. Fig. 6 is a longitudinal elevation, partly in section, showing the carrier-fingers as in position when in use; Fig. 7, a detail, in plan, of a piece of one carrier showing a finger-supporting casting; Fig. 8, a side elevation of one of the fingers; Figs. 9 and 10, respectively, plan and side views to show the mutual operations of the carrier-bars and sickle-head. Fig. 11 is a front elevation of the frame near the sickle-bar pitman-crank, the front sill being cut away on the under side to give ample space for the crank.

This invention relates to improvements in the platforms of harvesting-machines, and the points of novelty relate chiefly to construction of the platform and the adaptation therein and thereto of the finger-carrier; in the means for reciprocating alternately the finger-carriers; in the means for moving the grain across the platform, whereby either the heads or butts of the grain may be moved the faster; and in the general details of the construction and operation of the devices, all as will now be more fully set out and explained.

In the accompanying drawings the frame of the platform A is made of the finger-bar *a*, front sill, *a'*, cross-sill, a^2, rear sill, a^3, divider-board a^4, and cross-supports A' A', &c. The platform is supported in any desired way. Upon these supports, and parallel with the finger-bar, are secured the strips *b b*, as shown in Fig. 2. The spaces *b'* between each pair of these strips are designed for the finger-carrier C C' to move in, as will hereinafter be fully explained. The carriers C C' are made alike, being merely strips to which the castings D are attached. In the ears *d* of these castings the fingers E are pivoted, as shown in Fig. 6. These fingers are preferably made of rather short length toward the grain-wheel end of the platform, and thence, toward the binder or elevator, increase in length, the longest being at that end of the platform. The object of this is to have the teeth short where the grain is thin on the platform, and longer toward the binder or elevator where more grain has accumulated. The fingers are so made that when in position in the platform the front ends or points will project a little above the surface of the platfom, so as to readily catch the grain when the carriers are worked. This inclination is readily given by properly shaping the lower part, *e*, of the finger where it rests on the base of casting D, while the upward movement of the finger is limited by the rear part, *e'*, of said finger resting on said casting D. Thus the said finger will be raised in the forward movement of the carriers by coming in contact with the grain, and in the reverse movement fall down and pass under the grain.

It will be observed that the ends or points *e e'* of the fingers are so made as not to come above the surface of the platform, and thus in the operation of the carriers all danger of the grain catching under the fingers is obviated. When the carriers, so supplied with fingers, are placed in spaces *b'* in the platform, the flanges or strips b^2 are secured upon the upper face of strips or pieces *b*, and serve to guide and prevent the displacement of said carriers. The fingers can be placed any desired distance apart, but it is designed to have those on carriers C on a line with each other, and the same as to the fingers on carriers C'. The front or elevator ends of these carriers are jointed, respectively, to bars F F'. These are in turn, respectively, connected with the pitmen *f f'*. These pitmen are attached to and operated by the cranks G, which are driven in any desired way—preferably by a connection with the crank which drives the sickle. The crank-

shaft is vertical, and therefore takes up much less room, vertically, in its stroke than a horizontal shaft. The carriers, adjusted and operated as above described, will have a reciprocating motion in the platform, the fingers on C, alternating with those on C′. The joint of C or C′ with F or F′ being loose, the said bars F or F′ could sway at random but for the bent braces H H′. These braces have rollers *h* or *h′* in pairs, which straddle the pivoted guide I. These rollers serve to control the carriers, and when the guide is in line with the movement of the carriers cause them to move with equal length of stroke at front and rear. By means of the lever *i*, which extends up and quite near to the driver's seat, the said guide can be held straight or given any desired inclination.

When the guide is swung at an angle, as indicated by dotted lines in Fig. 1, the pieces F F′ are caused to slant one way at one end of the stroke and in the opposite way at the other end of the stroke, giving a longer stroke to the front end than to the rear; and when the guide is swung the other way a long stroke is given at the rear and a short one at the front. The object of all this is to enable the driver to so manage the carriers by means of the guide as to have the butts of the grain carried faster than the heads, or vice versa, and thus insure that the grain shall reach the elevator or binder at right angles with the machine and the band. This is a very desirable feature in the working of this class of devices, and is a very essential point for doing good work in all kinds of grain, and with grain in all conditions. The sickle-head K will slide in block L, while the tapering bearings *k* on its opposite sides fit in tapering holes, and by means of set-bolts can be adjusted for wear. The ends *m* are bolted to the block *n*, which is connected with and has motion from crank *o*, operated by gears in any desired way.

The cranks G, Fig. 1, which run the carriers, are designed to be connected by gearing or otherwise with the crank-shaft which drives the sickle, in such a manner that the carrier-cranks will be at right angles with the pitman-crank in regard to their line of center, or the lines 7 and 8, Figs. 9 and 10. They will therefore be at right angles with each other, or alternate in the amount of power being used. The carrier-crank being placed in position, as shown in Fig. 9, and connected by miter-gearing with the pitman-crank, as represented, when the double crank is moved in the direction shown by arrow from 9 to 10, which is that quarter of the circle in which the crank is most remote from the center line, 7, the amount of motion communicated to the carriers is represented by the distance between the lines 1 and 2; but this has caused the pitman-crank to move in the direction indicated from 11 to 12, being that quarter of the circle in which the crank is nearest—in fact, crosses the line 8—and the amount of motion communicated to the sickle is represented by twice the distance from 5 to 6. If these cranks are now moved in the same direction another quarter of a revolution, the inequality of motion transmitted to the carriers and the sickle will be reversed, the amount of motion imparted to the carriers being represented by twice the distance between the lines 2 and 3, while the amount of motion imparted to the sickle is represented by the distance between the lines 5 and 4. By this it will be plainly seen that the carrier-cranks are doing their greatest amount of work while the crank driving the sickle is doing very little work, and vice versa, thus causing a more even use of power, and consequently less liability to clog or stop the harvester.

In Fig. 9 is seen more clearly than in Fig. 1 the mode of changing the length of stroke of the front and rear carriers. This figure represents the short stroke in front and the long stroke in the rear carriers. This is done by swinging the guide I on its central pivot, which, by means of a roller or rollers on the braces connecting with the bars *f f′*, causes them to slant, as before stated.

I may arrange the rollers as now shown in the drawings, or have only three—two on one side and one on the opposite—and in other ways vary the mere manner of applying them.

Mortises or recesses may be cut in the sides of strips *b*, as shown in dotted lines, Fig. 5, and adjacent to the carrier, to allow dirt or loose grain that might accumulate on the carrier to drop through.

By the construction as above explained the platform can be made very much thinner than in any like device I know of. It need not, by the above plan, be more than two and one-quarter inches thick. This will allow the machine to cut very low and pick up lodged grain with ease. Both these ends are very desirable points to attain in devices of this sort.

Having now described my invention, what I consider new, and desire to secure by Letters Patent, is—

1. A harvester-platform having carriers provided with fingers E, pivoted in castings D, and operating as described, combined with the bars F F′, and pitmen connecting with a double crank on a vertical shaft, whereby alternately-reciprocating motion can be imparted to said carriers, substantially as set forth.

2. In a harvester-platform having sets of fingers alternately reciprocated and jointed to the bars F F′, the braces H H′, having rollers *h h′*, in connection with a movable controlling-guide, I, substantially as and for the purposes set forth.

3. In a harvester-platform having sets of fingers alternately reciprocated, as described, and provided with braces H H′, having rollers *h h′*, a pivoted swinging steadying-guide I, on which the braces H H′, having rollers *h h′*, move, substantially as set forth.

4. In a harvester-platform having carriers C C′, provided with castings D, the fingers E, increasing in length according to their posi-

tion, those at the outer end of the platform being shorter and those near the binder or elevator being longer than those in the middle portions, as and for the purpose set forth.

5. In a harvester, reciprocating or longitudinally-moving carriers connected to cross-bars F F′, combined with a swinging guide, whereby said bars may be caused to change their relative length of stroke at front and rear ends, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER ELIPHALET CRANE.

Witnesses:

G. R. BUCKMAN,

J. C. YOUNG.