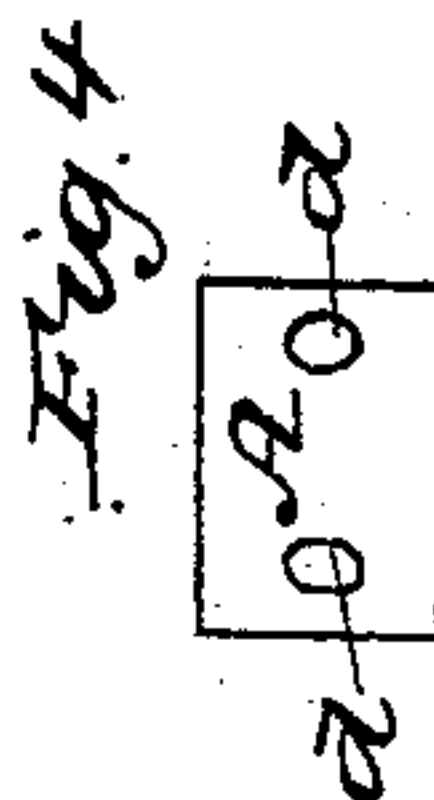
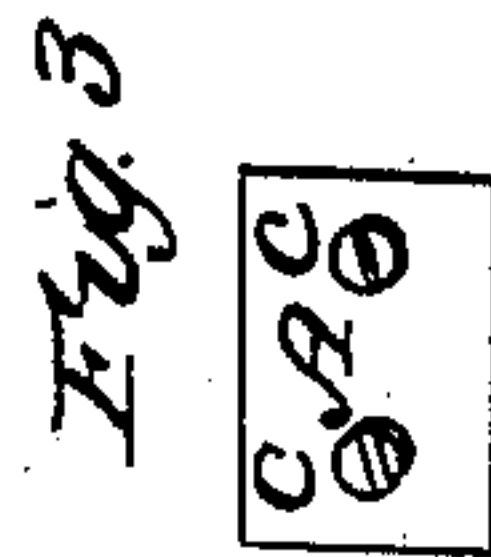
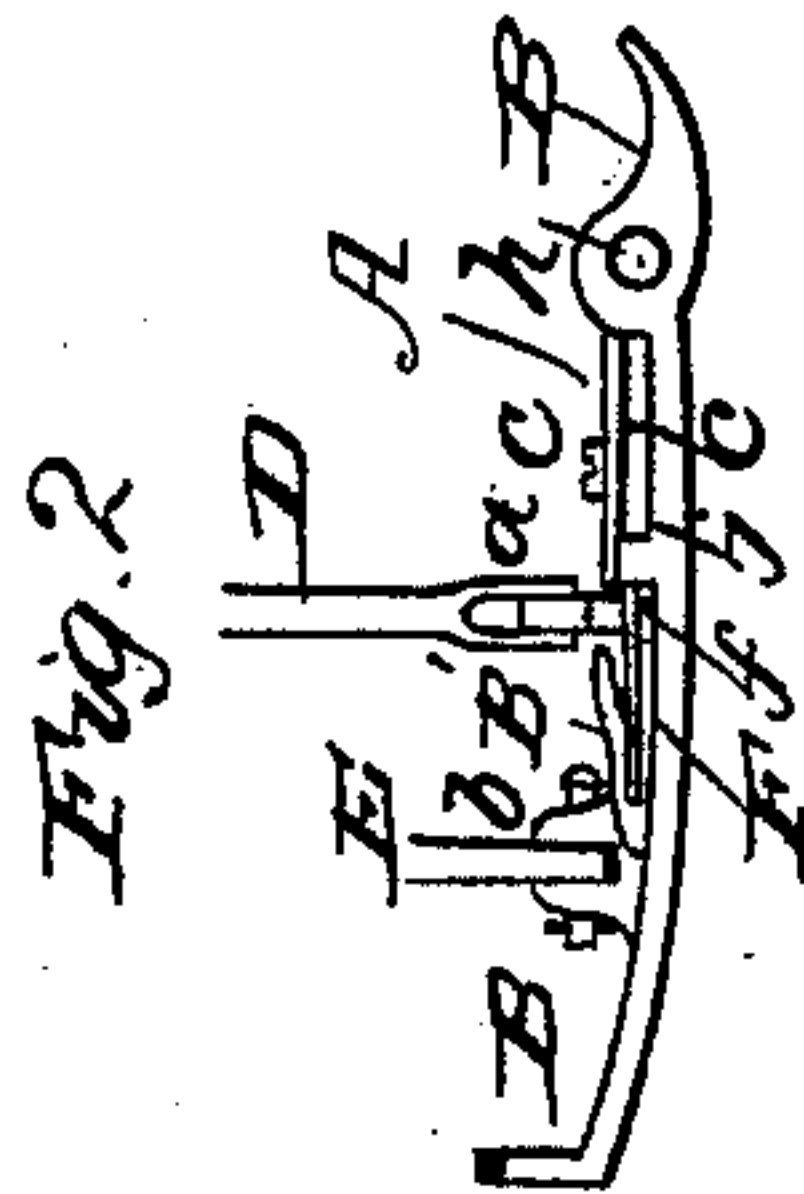
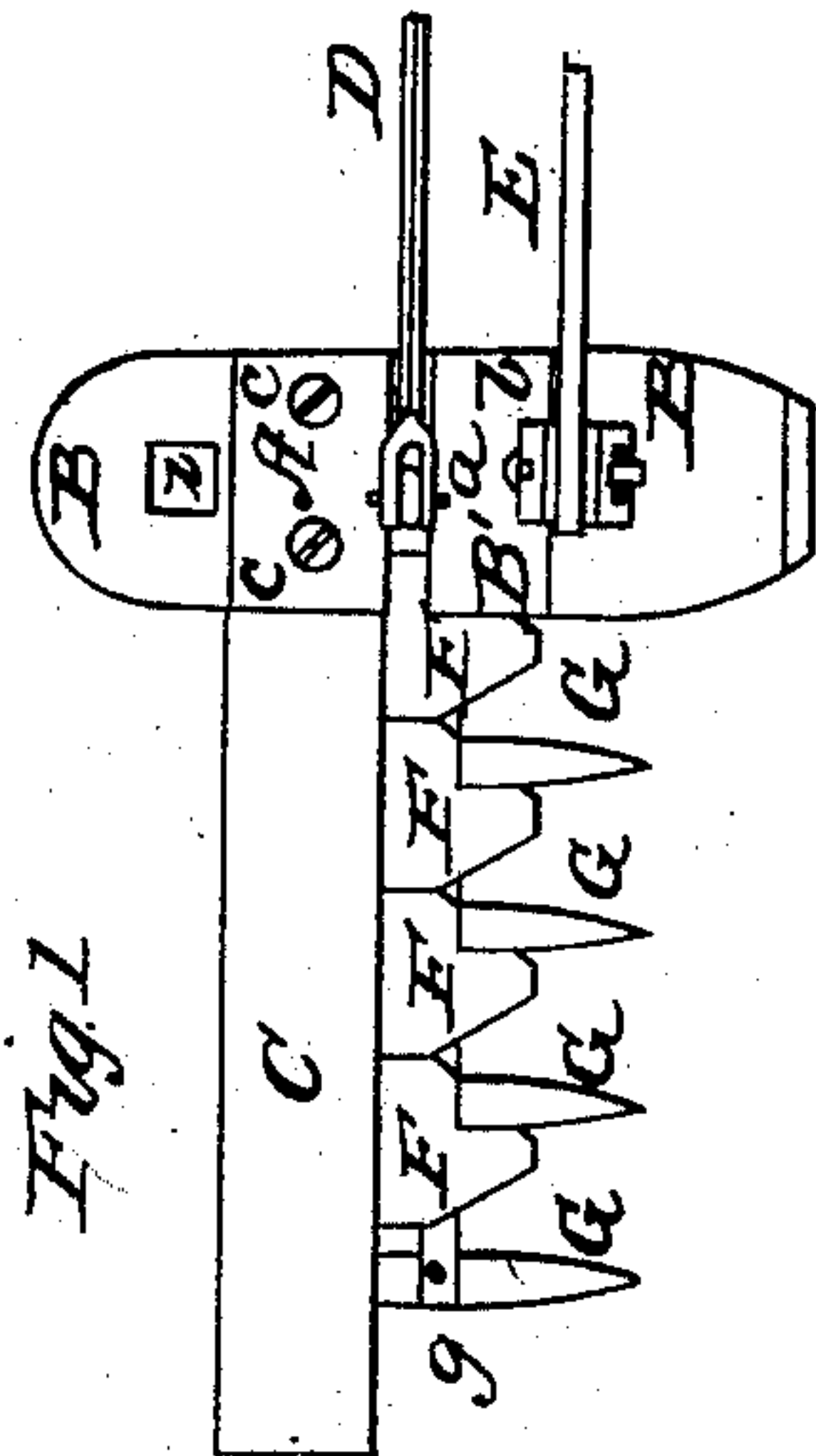


BALL & BALLARD.

Harvester.

No. 27,511.

Patented March 20, 1860.



Witnesses  
*Wm. H. Dodge*  
*Jno. C. Adams*

Inventor  
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*M. L. Ballard*

By their Attorney.

*Thos. H. Dodge*

# UNITED STATES PATENT OFFICE.

E. BALL AND M. L. BALLARD, OF CANTON, OHIO, ASSIGNORS TO E. BALL,  
OF SAME PLACE.

## IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 27,511, dated March 20, 1860.

*To all whom it may concern:*

Be it known that we, E. BALL and M. L. BALLARD, both of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Machines for Harvesting Grain and Grass; and we do hereby declare that the following is a full and clear description, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification, and in which—

Figure 1 is a top view. Fig. 2 is an end view of Fig. 1, with the connecting-rod and coupling-arm raised up, looking in the direction of arrow 1; and Figs. 3, 4, and 5 are views of the adjustable steel cap-plate detached.

Our invention consists in combining an adjustable steel-spring cap-plate with the heel of the cutter-bar and shoe which supports the heel of the finger-bar, as fully shown in Figs. 1 and 2 of the accompanying drawings.

Fig. 1 shows the cap-plate A attached to the shoe B, to which is fastened the finger-bar C. The heel of the finger-bar C is fastened in a recess in the shoe B, the position of the finger-bar being fully shown in Fig. 2. The heel of the cutter-bar *f*, to which are fastened the cutters F, works in front of the projection or piece *j* of the shoe B, while the front of the cutter, which is fastened to the heel of the cutter-bar, works under the lip B' of the shoe, and the rear edge under the steel cap A, as fully shown in Fig. 2. The cap A is provided with elongated holes *d*, through which pass the screws or bolts *e*, and by which the cap-piece is held in any desired position. (See Figs. 1, 2, 3, and 4.)

By the use of our steel cap-plate we obviate the difficulty which has heretofore been encountered—viz., the constant changing of the shoes through which the heel of the cutter-bar works, in consequence of the wearing out of the part of the shoe which projects over the base of the cutters or cutter-bar. This wearing out of the shoe, as above described, is great in all machines, as heretofore constructed, but more especially in that class of machines in which the finger-bar is so hinged to the main frame as to conform freely to the undulations of the ground independently of the main frame, to which is attached the crank-shaft, which operates the pitman and cutters, since the an-

gle at which the pitman operates the cutter-bar is, in such cases, constantly changing while the parts are in operation, and often when the finger-bar falls into depressions the upward strain on the heel of the cutter-bar and the shoe which holds it in its place is very great.

By the use of our steel cap-piece A, when one edge becomes worn, as seen at *e*, Fig. 5, it can be turned over, and when both edges are worn so as to be unfit for further use, then the plate can be reversed and both of the opposite edges be made in turn to hold the heel of the cutter-bar in place. It will thus be seen that the cap-plate can be so adjusted and reversed as to be applied to use in four different positions.

The cap-plate, in addition to the above advantages, also possesses the capability of yielding to a considerable extent under very heavy and sudden strains, and thus tends to save the pitman, heel of the cutter-bar, crank-shaft, and gearing from injury under such circumstances.

The cap-piece A can be adjusted so as to be always in close contact with the projection on the cutter-bar, to which the pitman D is attached, as seen at *a*, Figs. 1 and 2.

We have only shown and described so much of a harvester as is necessary to illustrate our invention. The shoe which we have shown is similar to the one described in the patent granted to E. Ball on 18th day of October, 1859, the mode of attachment to the machine being also the same—viz., by means of the coupling-arm E, jointed at *b* in front of the pitman D, and a bolt passing through the hole *h* in the rear end of the shoe B, and through a projecting lug or joint-piece from the lower shoe, which rises up through the opening *i*, forming a hinged joint. The mode of attaching the shoe B, however, forms no part of our present invention.

The front of the steel-spring cap-plate A rests on the projection *j* of the shoe B, while the rear edge thereof bears against another projection of the shoe B. By this arrangement the spring is prevented by the projection *j* from bearing on the cutters or cutter-bar so as to cause undue friction, while the rear projection tends to keep the spring cap-plate from being forced out of place by the action of the cutter in case the bolts or screws by which it



is fastened happen to get loose. When the finger-bar happens to drop suddenly into a depression or hollow while the main frame is sustained on level ground, the spring cap-plate A yields to the sudden upward draft of the pitman, and thus avoids the great strain on the working parts of the machine, as above stated. The spring, however, after yielding to relieve the machine, retracts until its front edge rests on the projection *j* of the shoe B, where it remains until another sudden strain causes it to yield upward again.

Only a portion of the finger-bar is shown, the outer end being represented as broken off.

To the base of the fingers G is attached a guard, *g*.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

The combination and arrangement of an adjustable steel-spring cap-plate with the heel of the cutter-bar and the shoe which supports the heel of the finger-bar, substantially as described, and as shown in Figs. 1 and 2 of the accompanying drawings.

E. BALL.

M. L. BALLARD.

Witnesses:

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