

No. 653,406.

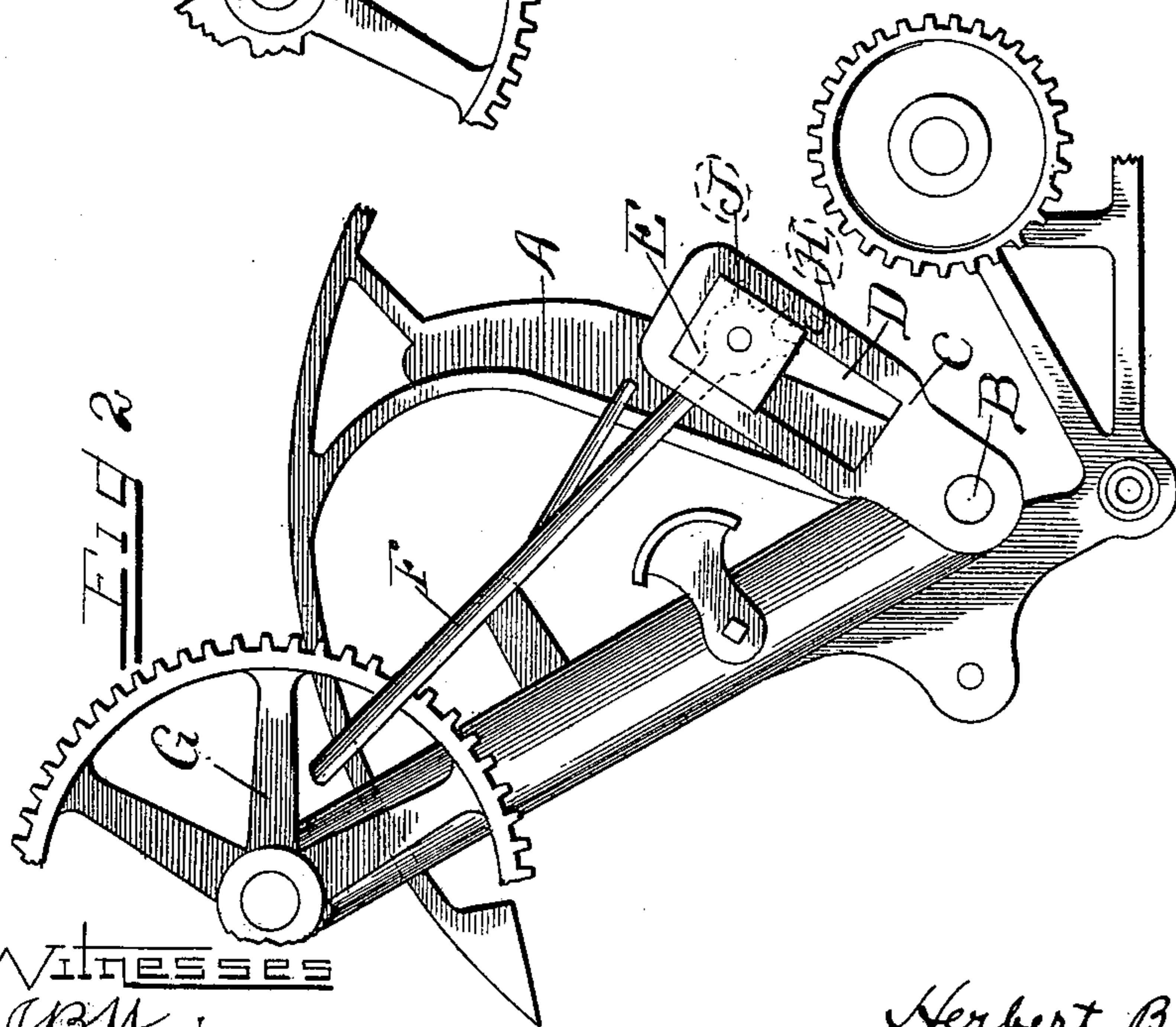
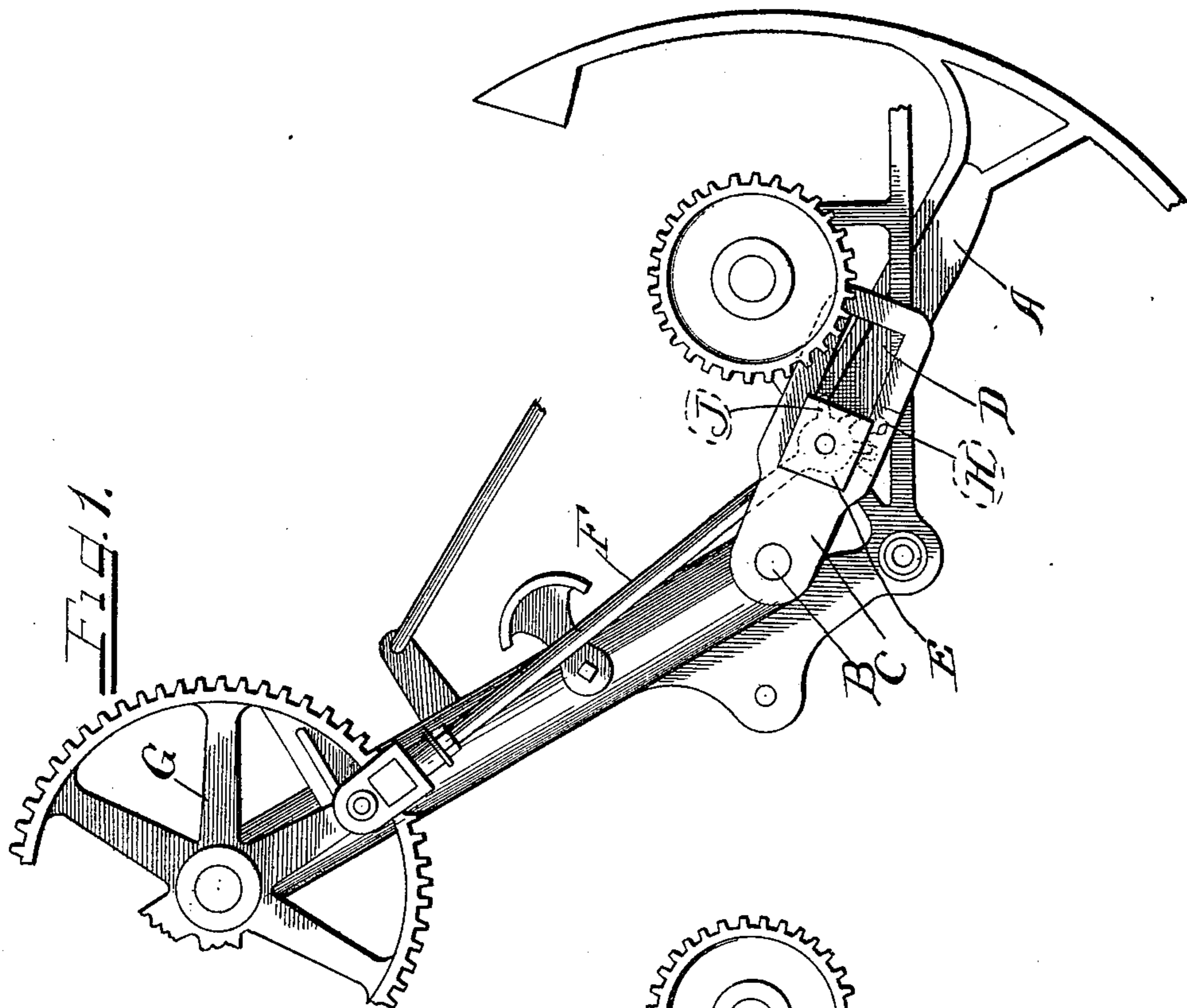
Patented July 10, 1900.

H. B. SPERRY.

NEEDLE OPERATING MECHANISM FOR GRAIN BINDERS.

(Application filed Dec. 14, 1899.)

(No Model.)



WITNESSES

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UNITED STATES PATENT OFFICE.

HERBERT B. SPERRY, OF SPRINGFIELD, OHIO.

NEEDLE-OPERATING MECHANISM FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 653,406, dated July 10, 1900.

Application filed December 14, 1899. Serial No. 740,237. (No model.)

To all whom it may concern:

Be it known that I, HERBERT B. SPERRY, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented a new and useful Needle-Operating Mechanism for Grain-Binders, of which the following is a specification.

This invention relates to needle-operating mechanism for grain-binders.

The object of the invention is to provide means for increasing the leverage of the needle-actuating mechanism as the needle is advanced to its work.

The invention consists, substantially, in the construction, combination, location, and relative arrangement, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings, Figure 1 is a broken detail view, in side elevation, of a portion of a grain-binder, showing the application thereto of a construction embodying the principles of my invention, the needle being shown in its retracted position. Fig. 2 is a similar view showing the needle in advanced position.

The same part is designated by the same reference-sign in both views of the drawings.

In Patent No. 467,467, issued January 19, 1892, to Maurice Kane, is shown, described, and claimed a construction of needle-operating mechanism for grain-binders wherein the power of the needle-operating pitman is increased as the needle is advanced to its work by reason of an increased leverage exerted by such pitman. In the construction disclosed in said patent, whereby an increased leverage is obtained, the needle-operating pitman is connected to a crank-arm on the needle-shaft through a block mounted to slide in a slot formed in said crank-arm, and a rod is connected at one end to said block and at the other end to the frame of the machine, whereby when the pitman is moved or projected by the operating-wheel to which it is connected to effect the advancing movement of the needle said block is moved outwardly in the slot in the crank-arm—that is, toward the outer end of such crank-arm—thereby increasing the leverage exerted by said pitman upon the crank-arm, and hence

increasing the power of the needle as it advances to its work of compression. The present invention relates to the same construction and is designed to cover a specific arrangement for securing the desired increase in the leverage exerted by the pitman upon the crank-arm of the needle-shaft.

Referring to the drawings, reference-sign A designates the needle; B, the shaft upon which the needle is mounted, said shaft being suitably journaled in the framework of the binder attachment.

C is the crank-arm carried by the needle-shaft and through which the rocking movement is imparted to the needle, said crank-arm being slotted longitudinally, as indicated at D, and mounted to slide in said slot is a block E, to which is pivotally connected one end of the operating-pitman F, the other end of said pitman being pivotally connected eccentrically to the operating wheel or gear G in the usual or any ordinary manner.

It is obvious that the block E may be omitted and the pitman guided in many other ways, the essential feature being a gear connection between the pitman and the crank-arm, and while I have shown and described a specific construction and arrangement for accomplishing the desired result I do not desire to be limited or restricted thereto.

The parts so far described may be of the usual or any well-known type or construction—such, for instance, as shown in the patent above mentioned.

It will be observed that when the needle is in its retracted position, as shown in Fig. 1, the parts are so relatively arranged that the block E occupies a position at the inner end of the slot D that is nearest the axis of the crank-arm C, and hence at a point where the pitman F will operate thereon through the shortest leverage. Now instead of employing a rod connected at one end to the block E and at the other end to the framework, as in said prior patent, whereby as the crank-arm is rocked to advance the needle to its work said block is moved outwardly in the slot in the crank-arm, thereby increasing the leverage of the pitman upon said crank-arm, I propose in the present case to employ gearing for accomplishing the same result, and to this end I form on the crank-arm C or secure

thereto the rack H, and also form or secure to the end of pitman F a cooperating gear I, the teeth of said gear arranged to mesh with the teeth of said rack. A convenient construction and arrangement is to provide the pitman with an enlarged head at the end, as clearly shown, and form gear-teeth thereon.

From the above description it will be seen that as the pitman F begins to move in a direction to rock the crank-arm C from the position shown in Fig. 1 toward that shown in Fig. 2—that is, as the needle begins to advance to its work of compression—the changing angle of the pitman with respect to the crank-arm will cause the teeth of gear J by their intermesh with the teeth of the rack H to effect a travel of the block E toward the outer end of the slot in the crank-arm, thereby increasing the leverage exerted by the pitman through said crank-arm, and hence also increasing the power exerted by the needle in accomplishing its work of compression. Similarly the movement of the pitman in a direction to return the needle from its advanced position, as shown in Fig. 2, to its retracted position, as shown in Fig. 1, causes the block E to be returned to the inner end of the slot D through the engagement of the gear-teeth, as above explained.

Having now set forth the object and nature of my invention and the manner of carrying the same into practical effect and operation, what I claim as new and useful and of my

own invention, and desire to secure by Letters Patent, is—

1. In a grain-binder the combination with a needle-shaft having a crank-arm connected thereto and a sliding block mounted thereon, of a pitman pivotally connected to said block, gearing connecting said block and crank-arm to effect relative movement thereof and means for actuating said pitman, as and for the purpose set forth.

2. In a grain-binder, a needle-shaft having a crank-arm, said crank-arm provided with a rack, in combination with a pitman having a movable connection with said crank-arm and provided with gearing arranged to engage the rack on said crank-arm, whereby said pitman exerts its force upon said crank-arm with an increasing leverage, and means for actuating said pitman, as and for the purpose set forth.

3. In a grain-binder, a needle-shaft having a slotted crank-arm, said crank-arm provided with a rack, in combination with a block mounted to slide in said slot, a pitman provided with gear-teeth and pivotally connected to said block, and means for actuating said pitman, as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 7th day of December, 1899, in the presence of the subscribing witnesses.

HERBERT B. SPERRY.

Witnesses:

W. B. EDGAR,
HENRY C. DIMOND.