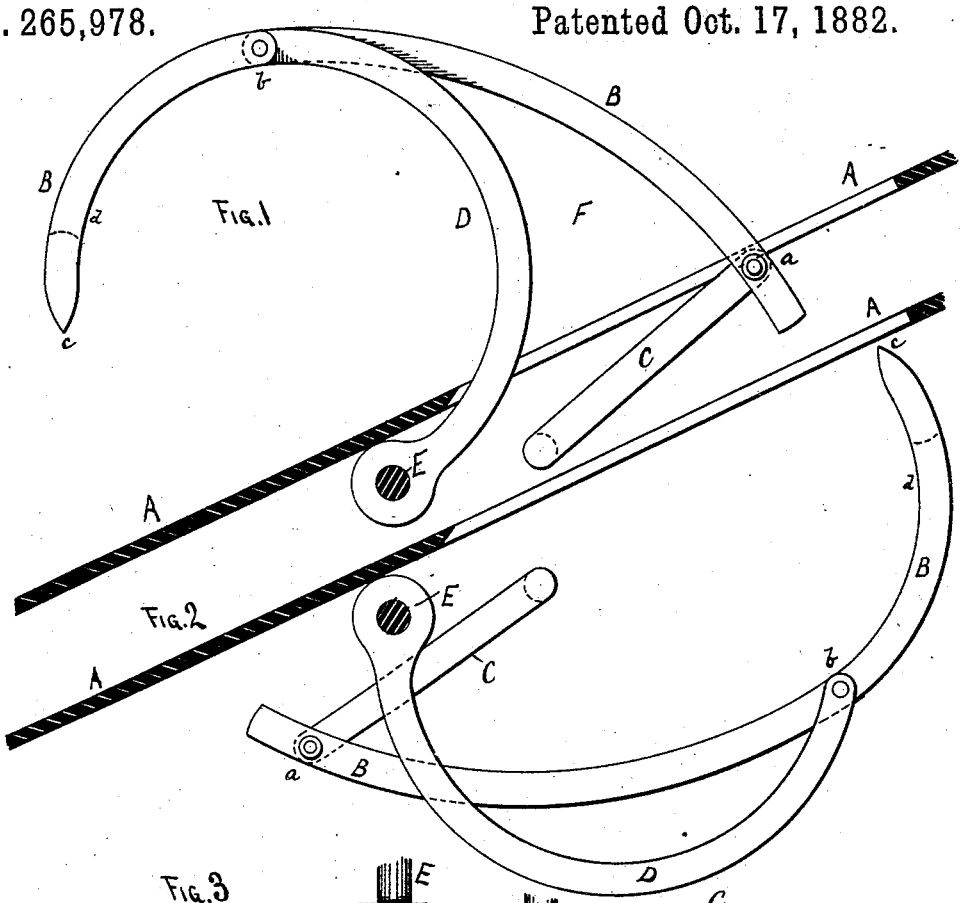
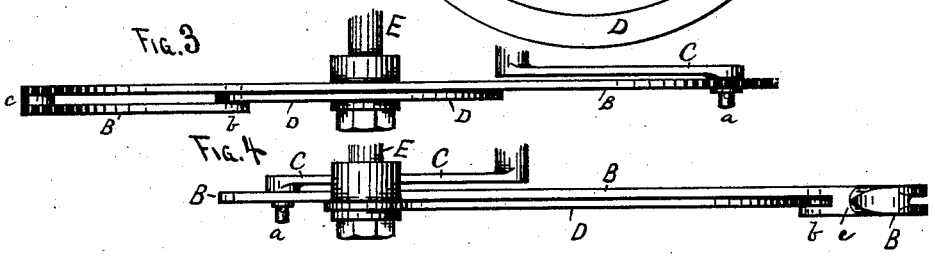
(No Model.)

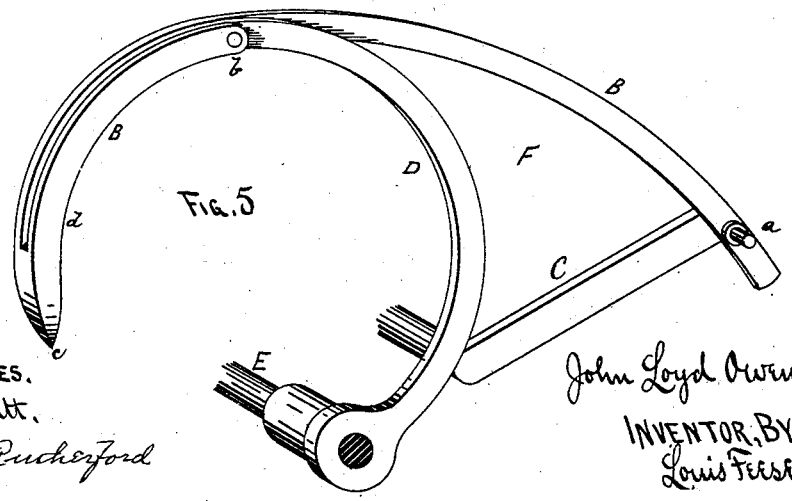
J. L. OWENS.

COMBINED NEEDLE ARM AND COMPRESSOR FOR GRAIN BINDERS.

No. 265,978. Patented Oct. 17, 1882.







Witnesses.
J. F. Orcutt.
H. V. Rutherford

John Loyd Owens
Inventor. By
Louis Fesser Hea. Attys.

UNITED STATES PATENT OFFICE.

JOHN LLOYD OWENS, OF MINNEAPOLIS, MINNESOTA.

COMBINED NEEDLE-ARM AND COMPRESSOR FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 265,978, dated October 17, 1882.

Application filed December 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN LLOYD OWENS, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Combined Needle-Arm and Compressor for Grain-Binders, set forth in the annexed specification.

This invention relates to the needle-arms of grain-binders; and it consists in the manner of constructing and arranging a combined needle-arm and compressing-arm, whereby when the two arms are brought forward into the proper position for forming the knot around the gavel the forward end of the needle-arm and the compressing-arm will form a nearly complete and perfect circle around the bundle, while the rear portion of the needle-arm will form a divider to hold the next gavel back, as hereinafter shown.

In the needle-arms of grain-binders two requisites are necessary, first, to pass through the loose grain and carry enough of it to form a bundle forward to the knot-tying mechanism, and at the same time compress and hold the grain while being so tied; and, second, to hold the remainder of the grain back by the rear side of the arm to prevent its interfering with the grain being bound.

The grain, when run down from the elevating belts or fingers, is in a loose mass, and hence must be compressed before the knot is tied in the binding cord or wire, while at the same time it is very essential that the loose straw should be divided and held back far enough from the bundle being bound to separate the loose grain from the bound bundle. Heretofore this compressing and dividing have been done by extra and separate sets of arms or mechanism; but by my arrangement the gavel to be bound is compressed and divided from the loose grain by one operation and only two connected arms. I attain these objects by the use of the mechanism illustrated by the accompanying drawings, in which—

Figure 1 is a side view of a portion of the binding-table and the connected needle and compressor arms in their upward position. Fig. 2 is a side view of the same parts in their lower position. Fig. 3 is a plan view when the arms are at their highest position, and Fig. 4 is a plan view when the arms are at their lowest position. Fig. 5 is a perspective view of the arms at their highest position.

A represents the outlines of the binding-table, upon which the grain falls after it leaves the elevator; and B, the needle-arm, connected by its rear end at *a* to an oscillating crank-arm, C, and provided with a curved compressor-arm, D, which is attached at one end to a shaft, E, and pivoted at *b* by the other end in the needle-arm B, some distance from its point *c*, as shown. The forward end of the needle-arm, from the point *c* to about the bend at *d*, is a segment of a circle, of which the shaft E is the center, and from *d* to the pivot *b* is the segment of a circle, the radius of which is the same as the radius of the compressor-arm D, while the remainder of the arm B, from *b* to *a*, is a long curve without any necessary definite radius. By this arrangement, when the arms B D are down beneath the table A, as shown in Fig. 2, the table is unobstructed, so that as large a quantity of loose grain as may be required to form a bundle is free to run down upon the table, and then when the crank-arm C is turned upward, carrying the needle-arm B with it, the point from *c* to *d* being on a curve, the radius of which is the center of the shaft E, and the crank-arm C lying nearly on a line between the shaft E and pivot *a*, the point *c* will retain the same distance from the shaft E during the first part of its stroke, so that it will pass up through the loose grain without moving it up or down the table A until the point *c* has passed above the grain. Then the curve from *d* to *b* will draw it down the table A, and the compressor-arm D coming into play, the gavel will be gradually compressed into a circle, as shown in Figs. 1 and 5, while that part of the arm B from *b* to *a* will keep the loose straw back, and thus create a space, F, between the loose straw and compressed bundle sufficiently large to separate the butts and heads of the two parts and prevent interlocking. By this simple arrangement I form a compressor, needle-arm, and divider by the two peculiarly formed and operated arms B D, and all operated by one movement of one crank-arm, C. The radius of the

arm D will be the same as or less than the bundle being bound. Hence the bundle will be compressed equally on all sides, so that the strain is in a great measure removed from the cord or wire and the bundles more symmetrically bound.

What I claim as new is—

The combination of the needle-arm B and compressor-arm D, the said compressor-arm pivoted at one end in said needle-arm and at the other end to a shaft, E, and said needle-arm adapted to be oscillated about said shaft by a crank-arm, C, whereby the parts operate as and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN LLOYD OWENS.

Witnesses:
C. N. WOODWARD,
LOUIS FEESER, Sr.