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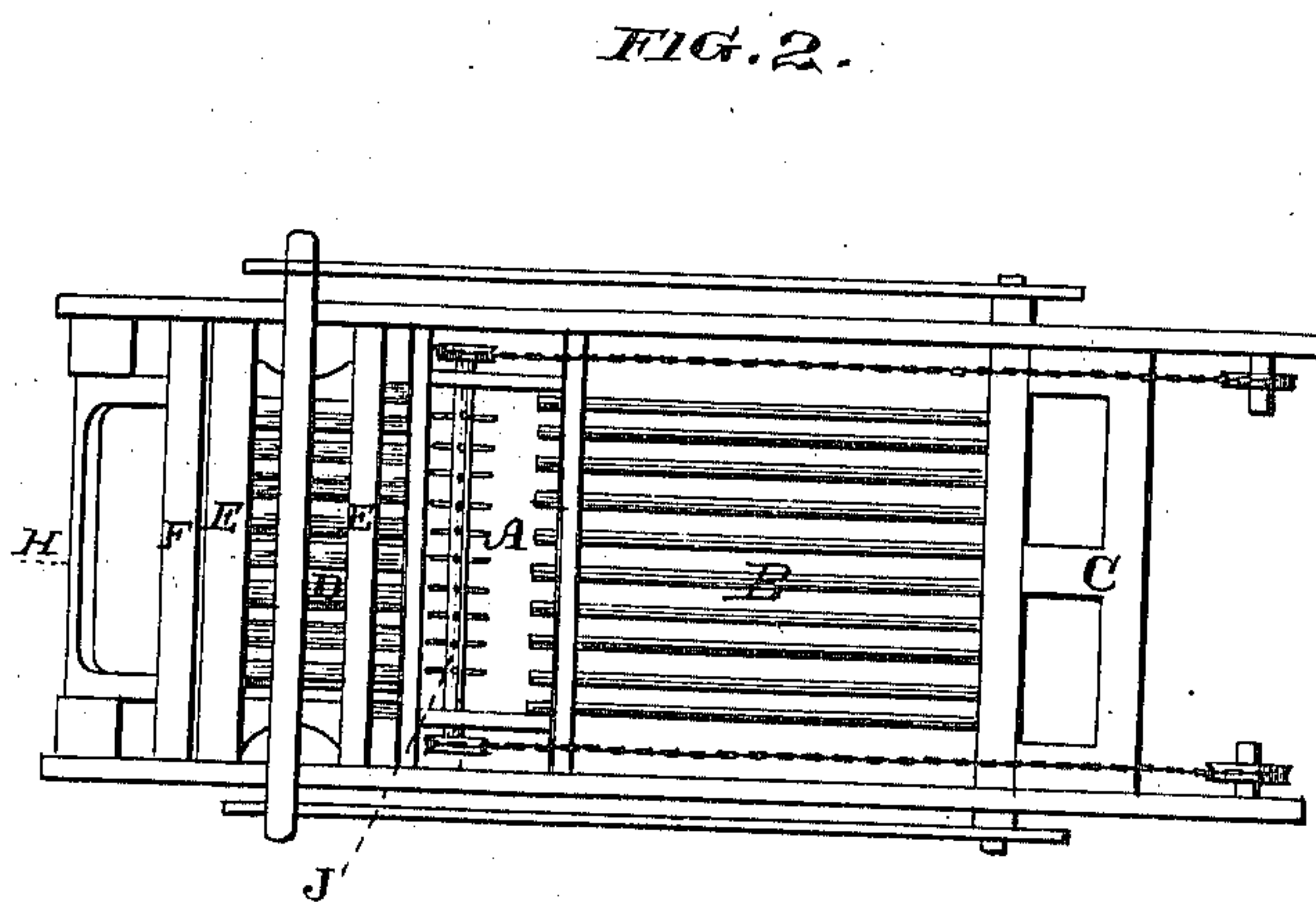
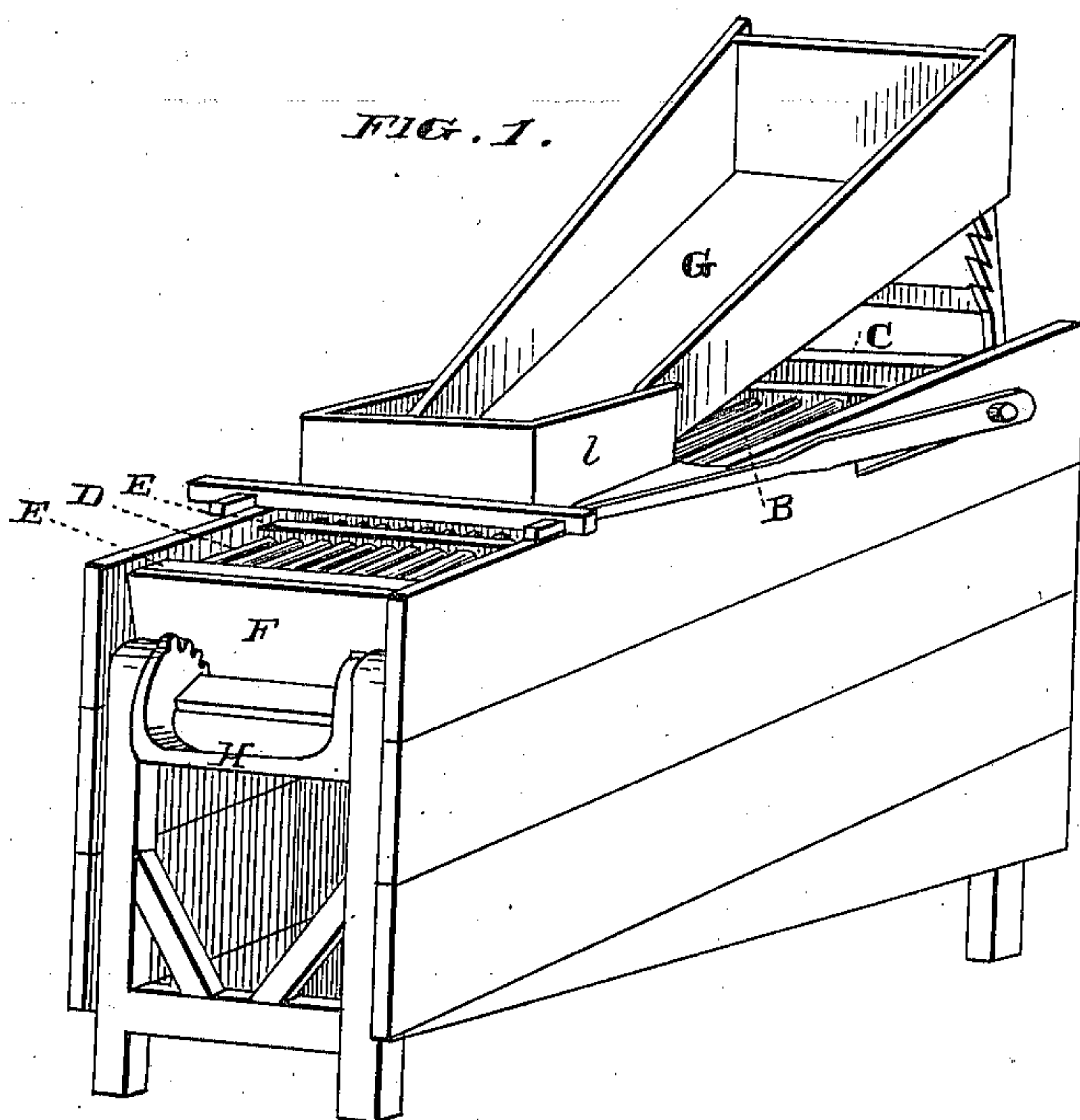
2 Sheets—Sheet 1.

W. R. QUINAN, F. KIMPFEL & J. OLSEN.

CARTRIDGE LOADING APPARATUS.

No. 299,009.

Patented May 20, 1884.



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2 Sheets—Sheet 2

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FIG. 3.

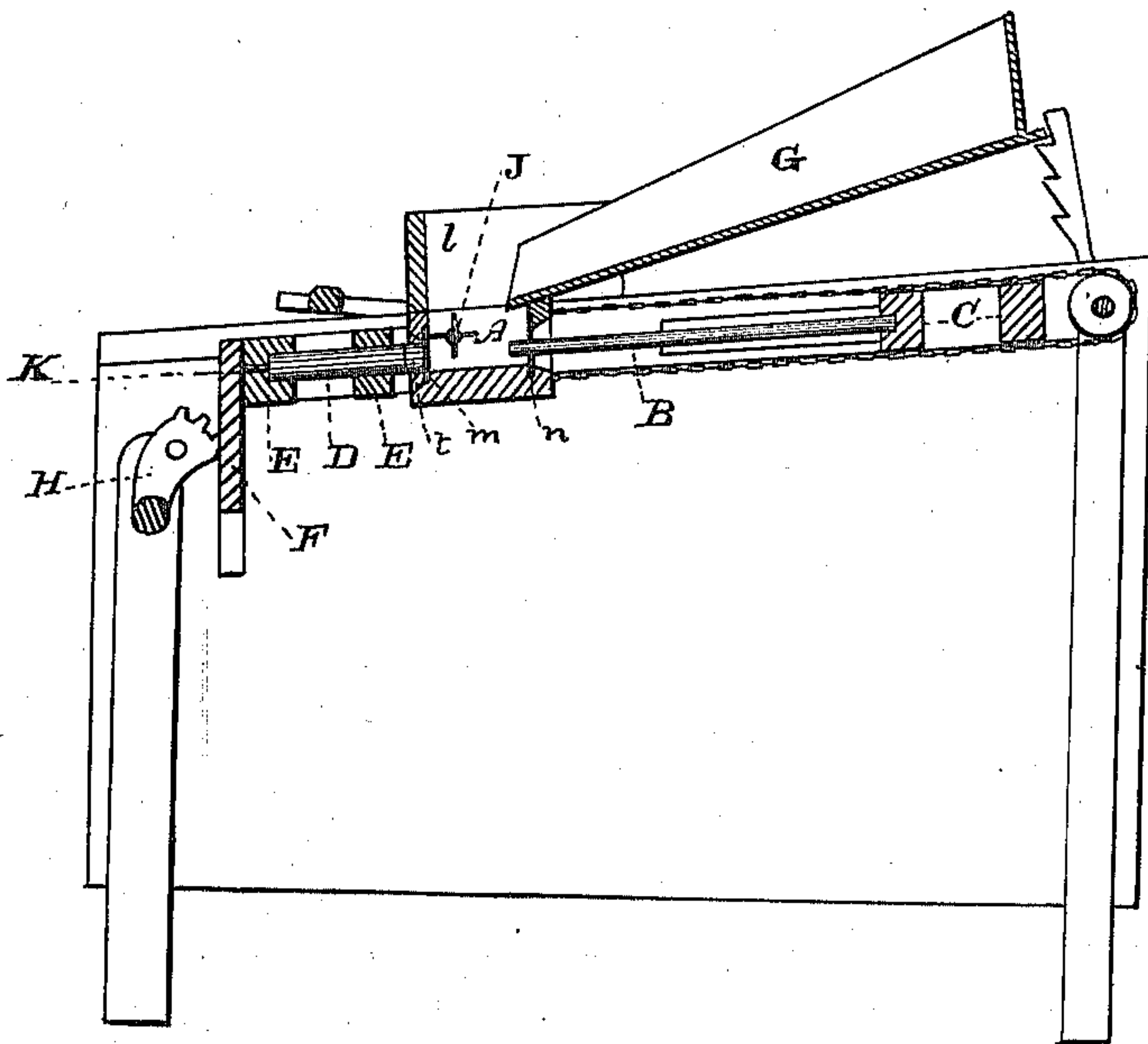


FIG. 4.

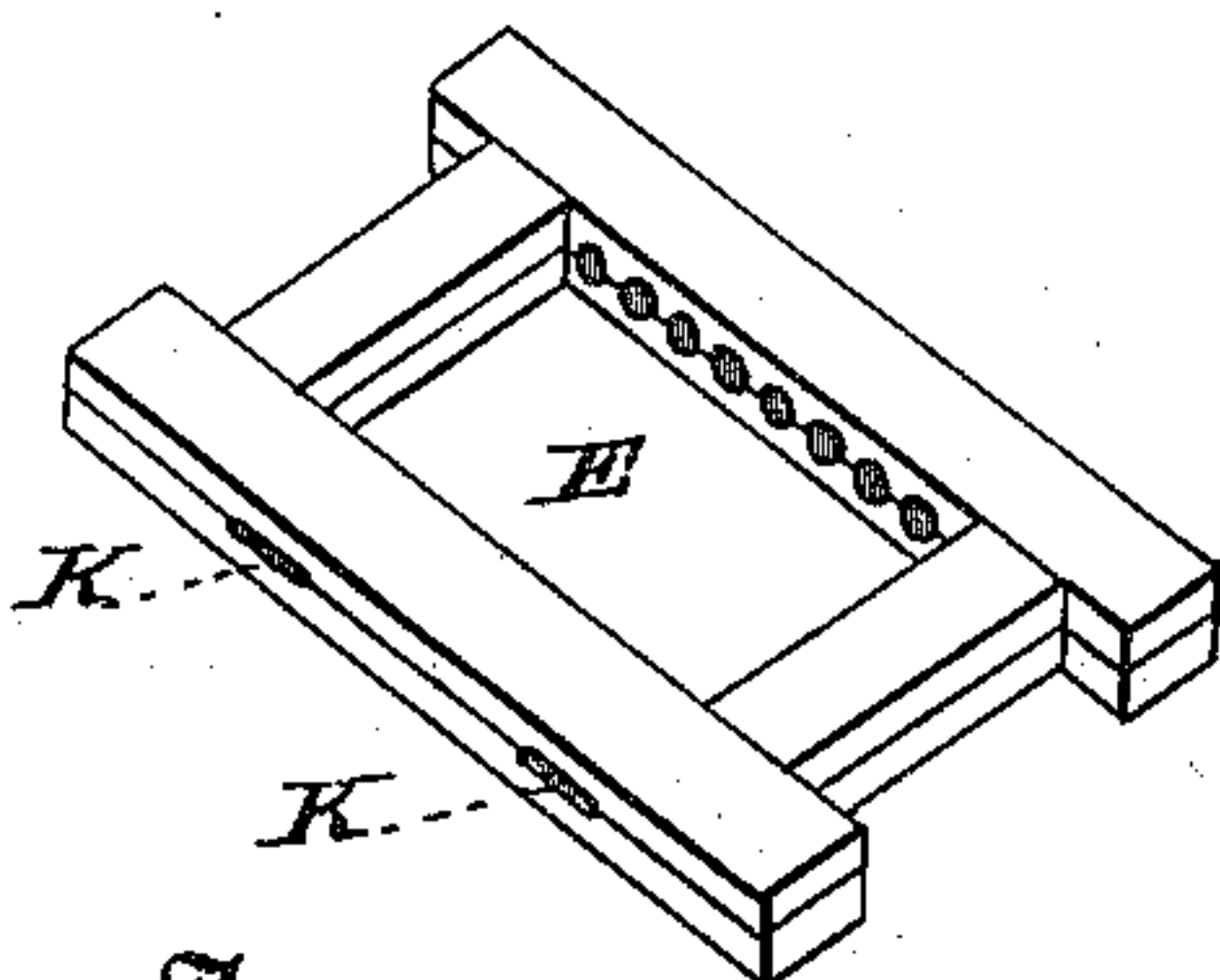
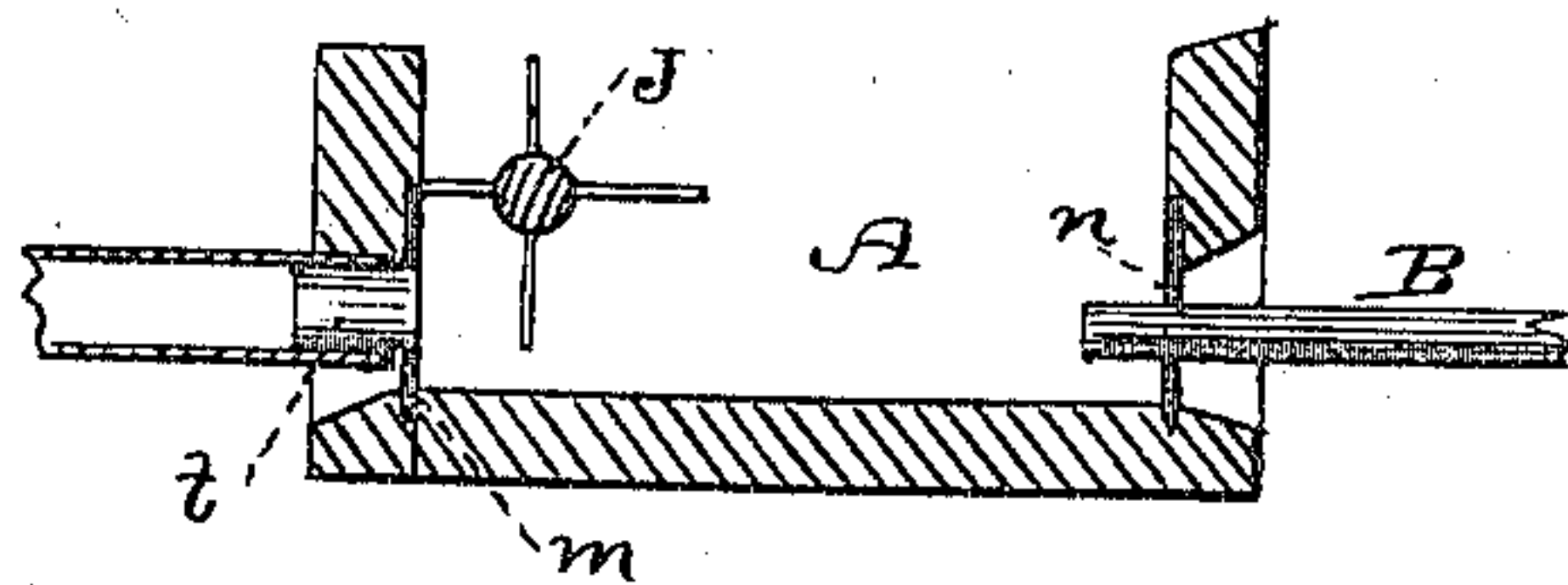


FIG. 5.



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# UNITED STATES PATENT OFFICE.

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JACOB OLSEN, OF MARIN COUNTY, CALIFORNIA.

## CARTRIDGE-LOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 299,009, dated May 20, 1884.

Application filed February 21, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM R. QUINAN and FRANK KIMPFEL, of the city and county of San Francisco, and State of California, and JACOB OLSEN, of the county of Marin and State of California, have invented an Improvement in Powder-Packing Apparatus; and we hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to an apparatus for packing nitro-glycerine powders and other pulverulent substances into cartridges or tubular cases made of paper or other material. This packing is usually done by hand, one cartridge at a time.

The object of our invention is to produce a machine which may be operated by hand or power in which a number of cartridges can be packed at one operation with the same safety as by ordinary hand-work.

The principle of the invention may be illustrated by an open-topped box, within which a system of parallel rods pass through two opposite sides near the bottom. The box is filled with powder, and the rods being drawn back until their ends are well within the box and then pushed forward, each rod will carry a charge of powder through the opposite hole and into the cartridges, which are held on short tubes projecting outward from the holes. A succession of strokes fills the cartridges, packing each charge until the whole cartridge is filled and packed.

Referring to the accompanying drawings for a more complete explanation of our invention, Figure 1 is perspective view of the machine. Fig. 2 is a top view or plan with certain parts removed. Fig. 3 is a longitudinal vertical section showing the essential parts of the invention. Fig. 4 is a view of the clamp E. Fig. 5 is a sectional view of the feed-box.

In the different drawings the same letters refer to the same parts.

G is a hopper from which the powder falls as required into the feed box or receiver A. (In Fig. 2 the hopper is removed.)

B is a system of parallel rods fastened at one end in the framed cross-head C. This cross-head is guided in the stroke by guide slots cut in the frame-work of the machine.

D represents the cartridge-shells in position

for filling, and held by the cartridge rack or clamp E. This rack or clamp is represented hinged at K to facilitate filling and emptying it. The rack or clamp E is supported against the blow of the rods by the sliding board F, which moves up and down in side grooves cut in the frame-work.

H is a pair of ratchet-levers connected by a cross-bar for raising and lowering the board F.

I is a three-sided box placed on the feed-box to prevent the powder from being thrown out. (The box I is not shown in Fig. 2.)

The details of the feed-box A are best shown in the section, Fig. 3. This box is cut away on both sides in the plane of the rods. The long rectangular slots thus made are covered by the thin metal plates *m n*, having holes corresponding to the rods. A row of short tubes, *t*, are soldered in the holes of the plate *m*. The cartridges, when in position, are pushed over the ends of the short tubes *t*. The rear holes in plate *n* serve only as guides and scrapers for the rods. Fig. 3 shows the rods at the limit of the back-stroke.

In operating the machine the rods pass through the box, and, pushing a charge of powder before them, pass through the plate *m* and short tubes *t*, and then push the charge into the cartridge. The stroke backward is always to the same point. The stroke forward becomes shorter as the cartridges are filled. To prevent the powder from caking and to facilitate its passage into the tubes *t*, a stirrer, J, is placed in the front part of the feed-box. That shown in the drawings is a rotary stirrer—a round shaft with rows of pins driven through it. These pins work in the spaces between the rods. The stirrer is rotated by sprocket-wheels and light chains. The wheels are placed on the ends of the shaft, (see Fig. 2,) and are separated from the body of the feed-box by partitions. The chains are fastened to the top of the cross-head C and pass over pulleys at the rear. This arrangement gives a reciprocating rotary motion to the stirrer as the cross-head is reciprocated. Other forms and motions can be given to the stirrer. It may be a rod with thin disks projecting between the packing-rods. These can be given a motion in the direction of the rod when the packing-rods are pushed back clear



of the disks and a motion back to their proper places when the packing-rods move forward. The same motion, in addition to its rotation, can be given the stirrer shown in the drawings by simple mechanical devices. The stirrer can also be made to revolve always in the same direction by a proper arrangement of pawls on the cross-head.

The advantages of our machine are its efficiency, simplicity, and the great safety with which it can be worked. To this end we build it almost entirely of wood.

The perforated plates *m n* and tubes *t* are preferably of thin brass. The sprocket chains and wheels in practice are covered, so that no powder can get to them.

To facilitate the labor of packing, we prefer to work the system of rods inclined at an angle with the horizontal. The angle may be much greater than that shown.

The operation of the machine is as follows: The rack or clamp *E*, being taken out and opened, is filled with cartridge-cases. It is then placed in position and the cartridges pushed onto the tubes *t*. The board *F* is next raised by depressing the cross-bar of the ratchet-levers *H*. A quantity of loose powder is next placed in the hopper *G* and enough raked down into the feed-box *A* to partly fill it. The packing-rods are now worked by means of the handles attached to the cross-heads *C*, or other suitable mechanism, till the cartridges are filled, when the board *F* is lowered and the rack *E* removed.

It will be manifest that one of the advantages of our construction is that the cartridges are not filled at once, but that a small quantity of powder is carried forward at each movement of the rods, and each of these small charges is tamped or packed into the cartridge-case by the rod as soon as it is introduced. The cartridge is thus filled by a succession of thoroughly-packed small charges, and will thus be of uniform density throughout.

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

1. A feed-box or receiver for the powder, having two series of holes, one on each side, one series being equipped with the short tubes, in combination with the clamp *E*, for holding the cartridge-cases, board *F*, and lever *H* for bracing the cartridge-clamps, rods *B*, and supporting cross-head, with their operating mechanism, substantially as described.

2. An apparatus for packing powder into cartridge-cases in successive small charges, consisting of a feed-box into which the powder is placed, and through the lower part of which a number of parallel rods are adapted

to reciprocate, short tubes through which the powder is forced by the rods, and a means for holding the cartridge-cases in line with the rods, so as to receive the powder as it is forced out by the rods, substantially as herein described.

3. A powder-packing apparatus consisting of a feed-box or receiver for powder, a series of parallel rods passing through opposite sides of the box, and having thin outer ends secured to a cross-head by which they may be caused to reciprocate, in combination with short tubes projecting from the side of the box opposite the cross-head to receive one end of the cartridges, and a clamp or means for holding the cartridges in line, substantially as herein described.

4. A powder-packing apparatus consisting of a feed-box or receiver for powder, a series of parallel rods passing through opposite sides of the receiver near the bottom, and having a guide or cross-head by which they are caused to reciprocate, in combination with a support or clamp by which the cartridge-cases are held in line with the rods, a board or backing against which the action of the rods is resisted, and a mechanism by which the board may be raised or lowered, substantially as herein described.

5. A powder-packing apparatus consisting of a feed-box or receiver, a series of parallel rods passing through opposite sides of the receiver near the bottom, and having one end connected with a cross-head by which they are reciprocated and guided, a clamp or holder by which the cartridge-cases are held in line to receive the powder, in combination with a device for stirring or agitating the powder within the receiver, substantially as herein described.

6. A powder-packing apparatus consisting of a receiver or feed-box, through opposite sides of which a series of parallel rods are caused to reciprocate by means of a sliding cross-head to which one end of the rods are fixed, a clamp or holder by which cartridges are held in line with the rods, so as to receive the powder forced out by them, in combination with agitators or stirrers supported upon a shaft within the feed-box, which shaft is actuated by a mechanism which transmits motion from the cross-head, substantially as herein described.

In witness whereof we have hereunto set our hands.

WM. R. QUINAN.  
FRANK KIMPFEL.  
JACOB OLSEN.

Witnesses:

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J. H. BLOOD.