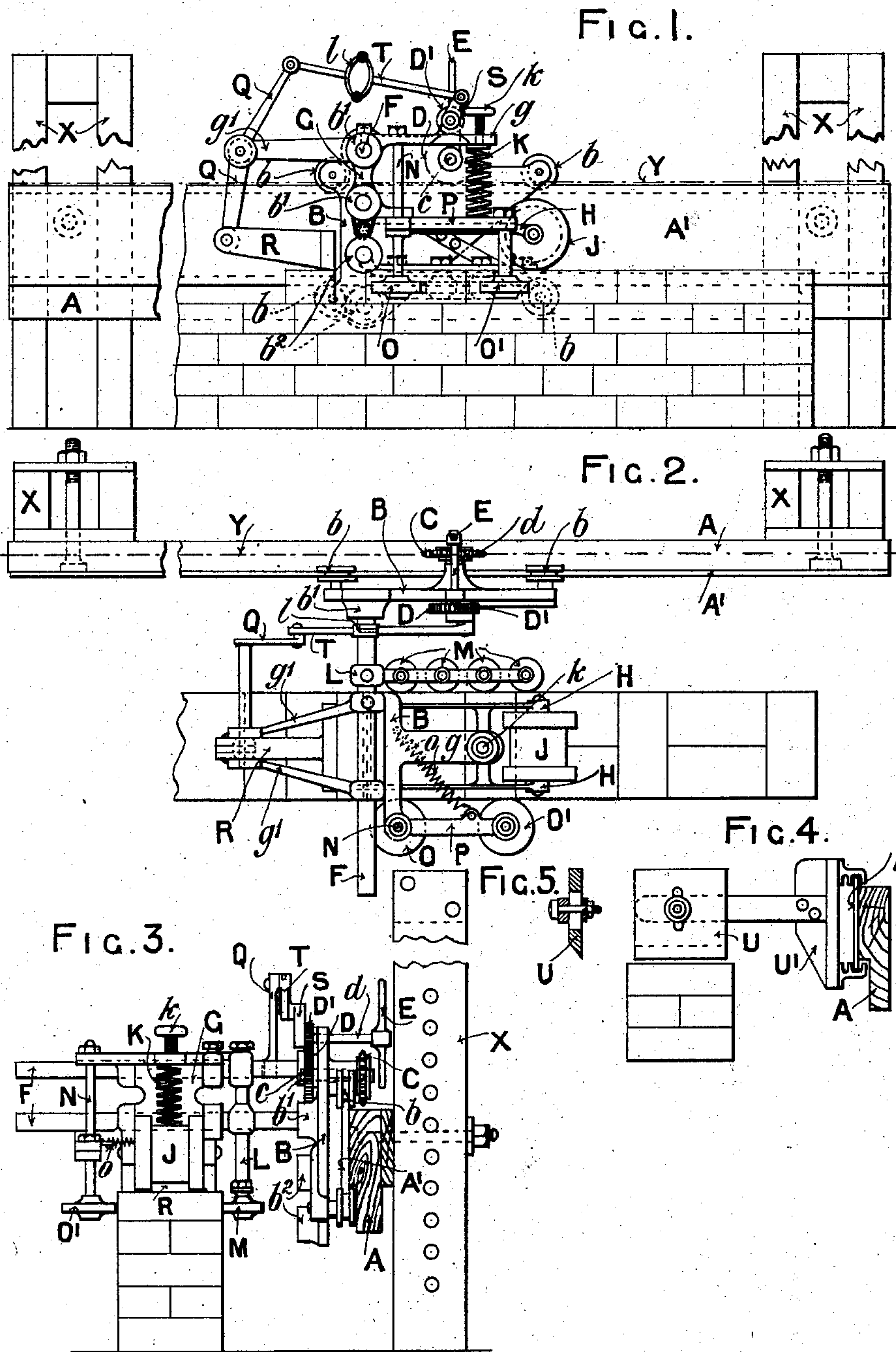


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PATENTED OCT. 13, 1903.

J. H. KNIGHT.  
BRICK LAYING MACHINE.  
APPLICATION FILED JUNE 15, 1903.

NO MODEL.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN HENRY KNIGHT, OF BARFIELD, ENGLAND.

## BRICK-LAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 741,507, dated October 13, 1903.

Application filed June 15, 1903. Serial No. 161,628. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HENRY KNIGHT, a subject of the King of Great Britain, residing at Barfield, near Farnham, in the county of Surrey, England, have invented a new and useful Improvement in Machines for Laying Bricks for Building Purposes, (for which I have applied for Letters Patent in Great Britain, numbered 161 and bearing date the 3d day of January, 1903,) of which the following is a full and complete specification.

This invention relates to certain improvements in the apparatus for laying bricks for building purposes, for which Letters Patent No. 669,220, bearing date March 5, 1901, were granted to me; and it consists in utilizing the depth of the beam or girder for the laying apparatus to travel on, in so mounting the laying apparatus on the frame traversing the beam or girder that the apparatus can be employed to commence at the ground-level, in operating the feed-pawl by the forward movement of the laying apparatus, in providing for the alteration of the position of the feed-pawl with respect to the gear operating it, so as to provide for the difference in position of the vertical joints of the bond, and finally in the employment of a striking or leveling board for spreading the mortar.

In the accompanying drawings, which illustrate this invention, Figure 1 is a broken view, in side elevation, of the apparatus. Fig. 2 is a view in plan thereof. Fig. 3 is a view in end elevation thereof; and Figs. 4 and 5 are views in end elevation and section, respectively, showing the device for leveling the mortar.

Throughout the views similar parts are marked with like letters of reference.

On the beam or girder A, which is supported by vertical posts X, arranged alongside the position of the wall to be built, is fixed a plate A', on which is mounted so as to be free to slide thereon a frame B, adapted to carry the brick-laying mechanism. This frame B is provided with small wheels *b b*, &c., adapted to run on the top and bottom edges of the plate A'. The frame B is caused to traverse the beam A either by means of a spur-wheel carried by the frame B, engaging a rack on or carried by the beam A or plate

A', or, as shown in the drawings, by means of a sprocket-wheel C, engaging a chain Y, (represented by a dotted line,) lying on the top of the beam A, but anchored thereto at each end. The spur or sprocket wheel C is mounted on an axle *c*, mounted in a suitable bearing in the frame B, said axle being geared by spur-wheels D D' with another axle, *d*, also mounted in suitable bearing in the frame B, which axle carries a hand-wheel E or its equivalent for rotating it. The frame B is provided with two sets of sockets *b' b'* and *b<sup>2</sup> b<sup>2</sup>*, adapted to receive and support a pair of bars F F, which carry the laying apparatus. These bars are normally mounted in the sockets *b' b'* at the upper part of the frame B, as shown in the figures of the accompanying drawings; but for the purpose of starting the work at or below the ground-level the bars are mounted in the sockets *b<sup>2</sup> b<sup>2</sup>* at or near to the bottom of the frame B.

On the bars F F is mounted a secondary frame G in such a manner that it can be fixed on said bars at any suitable distance from the face of the beam A. To this frame G is pivoted horizontally a double arm H, carrying a roller J, adapted to engage the top sides of the bricks as they are laid and force them down into position, a downward pressure being exerted on said arm by means of a spring K, acting between the arm H and a fixed arm *g*, carried by the frame G, the pressure exerted by said spring being capable of adjustment by a screw *k* or its equivalent. On the bars F F is also adjustably mounted a bracket L or its equivalent, carrying a series of rollers M M, &c., the function of which is to keep the face of the wall true. As an alternative a straight-edge carried by the beam A may be employed. On the opposite side of the frame G is carried a vertically-arranged spindle N, on the lower end of which is mounted a roller O. On said vertical spindle or on the frame G is mounted an arm P, carrying at its free end a roller O', the said arm being pulled toward the frame G, so as to cause the roller O' to exert a pressure on the bricks as they are laid and force them against the rollers M M, &c., by means of a spring *o*. It will be understood that as the series of rollers M M, &c., are capable of being fixed on



the bars F F independent of the frame G the apparatus can be adapted to build walls of any desired thickness.

Extending from the secondary frame G in the opposite direction to the arms *g* and H are arms *g'*, to the ends of which is pivoted a rocking lever Q, carrying at its lower end a pawl or presser R, whose function is to press the bricks, which are fed by hand to suit the bond, into position up against the last laid brick. When the bond of the wall requires it, the operative face of the pawl or presser is stepped or set off, as required. The rocking arm Q is operated by means of a crank S on the axle *d*, with which it is connected by means of a rod T, preferably having a spring, such as *l*, in its length, so as to make it slightly elastic. The axle *d* is so geared to the axle *c* that the crank S makes two revolutions while the frame G is traveling one brick length, so that when a cross-brick or half-brick is fed to it it drives it home at once, whereas when a complete brick is fed lengthwise to it one reciprocation of the pawl is inoperative and travels over the top of the brick, and the next reciprocation is operative and forces the brick up against the last one laid. To allow for the difference in position of the vertical joints in the bond, the angular position of the crank S with respect to the wheel D' must be varied. This may be effected either by disengaging the wheel D from the wheel D' by varying the position of the crank with respect to the wheel D or by resetting the laying apparatus before commencing each new course of bricks by altering the position of the spur-wheel or sprocket-wheel C with respect to either the rack or chain Y, as the case may be.

In order to spread the mortar more evenly than it can be done by hand, I use a striking or leveling board U, as shown in Figs. 4 and 5. This board is fixed to a carrier or carriage U', running on the beam A, or it may be fixed to the frame G in advance of the pawl R.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine for laying bricks the combination with a vertically-adjustable beam, of a plate fixed to said beam, of a frame mounted to slide on edges of said plate, of means for traversing said frame on said plate, of two sets of sockets in said frame, of two bars mounted in said sockets in said frame and adapted to carry the laying apparatus, and of a secondary frame carrying the laying apparatus adjustably mounted on said bars and capable of being fixed thereon, as set forth.

2. In a machine for laying bricks the combination with a vertically-adjustable beam, of a plate fixed to said beam, of a frame mounted to slide on edges of said plate, of means for traversing said frame on said plate, of two sets of sockets in said frame, of two bars mounted in said sockets in said frame and adapted to carry the laying apparatus, of a secondary frame carrying the laying appa-

ratus adjustably mounted on said bars and capable of being fixed thereon, of an arm pivoted on said frame and carrying a spring-controlled roller at its free end, of a bracket adjustably mounted on the bars carried by the main frame, of a series of horizontally-arranged rollers carried by said bracket, of a vertically-arranged spindle carried by the secondary frame of the laying apparatus, of a roller loosely mounted on end of said spindle, of a spring-controlled arm pivoted on said spindle and carrying a roller at its free end, of a rocking lever pivoted to the secondary frame, of a pawl or presser pivoted to lower end of said rocking lever, of a crank driven by the gear for traversing the main frame on the beam, and of a rod connecting the crank with the rocking lever, as set forth.

3. In a machine for laying bricks the combination with a vertically-adjustable beam, of a plate fixed to said beam, of a frame mounted to slide on edges of said plate of means for traversing said frame on said plate, of two sets of sockets in said frame, of two bars mounted in said sockets adapted to carry the laying apparatus, of a secondary frame carrying the laying apparatus adjustably mounted on said bars and capable of being fixed thereon, of an arm pivoted on said frame and carrying a spring-controlled roller at its free end, of a bracket adjustably mounted on the bars carried by the main frame, of a series of horizontally-arranged rollers carried by said bracket, of a vertically-arranged spindle carried by the secondary frame of the laying apparatus, of a roller loosely mounted on end of said spindle, of a spring-controlled arm pivoted on said spindle and carrying a roller at its free end, of a rocking lever pivoted to the secondary frame of the laying apparatus, of a pawl or presser pivoted to lower end of said rocking lever, of a crank driven by the gear for traversing the main frame on the beam, of a rod connecting the crank with the rocking lever, and of means for adjusting the laying apparatus to allow for the difference in position of the vertical joints of the bond, as set forth.

4. In a machine for laying bricks the combination with a vertically-adjustable beam, of a plate fixed to said beam, of a frame mounted to slide on edges of said plate, of means for traversing said frame on said plate, of two sets of sockets in said frame, of two bars mounted in said sockets adapted to carry the laying apparatus, of a secondary frame carrying the laying apparatus adjustably mounted on said bars and capable of being fixed thereon, of an arm pivoted on said frame and carrying a spring-controlled roller at its free end, of a bracket adjustably mounted on the bars carried by the main frame, of a series of horizontally-arranged rollers carried by said bracket, of a vertically-arranged spindle carried by the secondary frame of the laying apparatus, of a roller loosely mounted on end of said spindle, of a spring-controlled arm



pivoted on said spindle and carrying a roller at its free end, of a rocking lever pivoted to the secondary frame of the laying apparatus, of a pawl or presser pivoted to lower end of  
 5 said rocking lever, of a crank driven by the gear for traversing the main frame on the beam, of a rod connecting the crank with the rocking lever, of means for adjusting the laying apparatus to allow for the difference in  
 10 position of the vertical joints of the bond, and of a striking or leveling board carried in front of the laying apparatus, as set forth.

5. In a machine for laying bricks the combination with a vertically-adjustable beam, of  
 15 a plate fixed to said beam, of a frame mounted to slide on edges of said plate of means for traversing said frame on said plate, of two sets of sockets in said frame, of two bars mounted in said sockets adapted to carry the laying  
 20 apparatus, of a secondary frame carrying the laying apparatus adjustably mounted on said bars and capable of being fixed thereon, of an arm pivoted on said frame and carrying a spring-controlled roller at its free end, of a  
 25 bracket adjustably mounted on the bars carried by the main frame, of a series of horizontally-arranged rollers carried by said bracket, of a vertically-arranged spindle carried by the secondary frame of the laying apparatus,  
 30 of a roller loosely mounted on end of said spindle, of a spring-controlled arm pivoted on said spindle and carrying a roller at its free end, of a rocking lever pivoted to the secondary frame of the laying apparatus, of a pawl or  
 35 or presser pivoted to lower end of said rocking lever, of a crank driven by the gear for traversing the main frame on the beam, of an elastic rod connecting the crank with the rocking lever, of means for adjusting the lay-

ing apparatus to allow for the difference in 40 position of the vertical joints of the bond, and of a striking or leveling board carried in front of the laying apparatus, as set forth.

6. In a machine for laying bricks the combination with a vertically-adjustable beam, of 45 a plate fixed to said beam, of a frame mounted to slide on edges of said plate of means for traversing said frame on said plate, of two sets of sockets in said frame, of two bars mounted in said sockets adapted to carry the laying 50 apparatus, of a secondary frame carrying the laying apparatus adjustably mounted on said bars and capable of being fixed thereon, of an arm pivoted on said frame and carrying a spring-controlled roller at its free end, of a 55 bracket adjustably mounted on the bars carried by the main frame, of a series of horizontally-arranged rollers carried by said bracket, of a vertically-arranged spindle carried by the secondary frame of the laying apparatus, of 60 a roller loosely mounted on end of said spindle, of a spring-controlled arm pivoted on said spindle and carrying a roller at its free end, of a rocking lever pivoted to the secondary frame of the laying apparatus, of a pawl or 65 presser pivoted to lower end of said rocking lever, of a crank driven by the gear for traversing the main frame on the beam, of an elastic rod connecting the crank with the rocking lever, of means for altering the position 70 of the presser or pawl with respect to the secondary frame of the laying apparatus, and of a striking or leveling board carried in advance of the laying apparatus, as set forth.

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Witnesses:

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