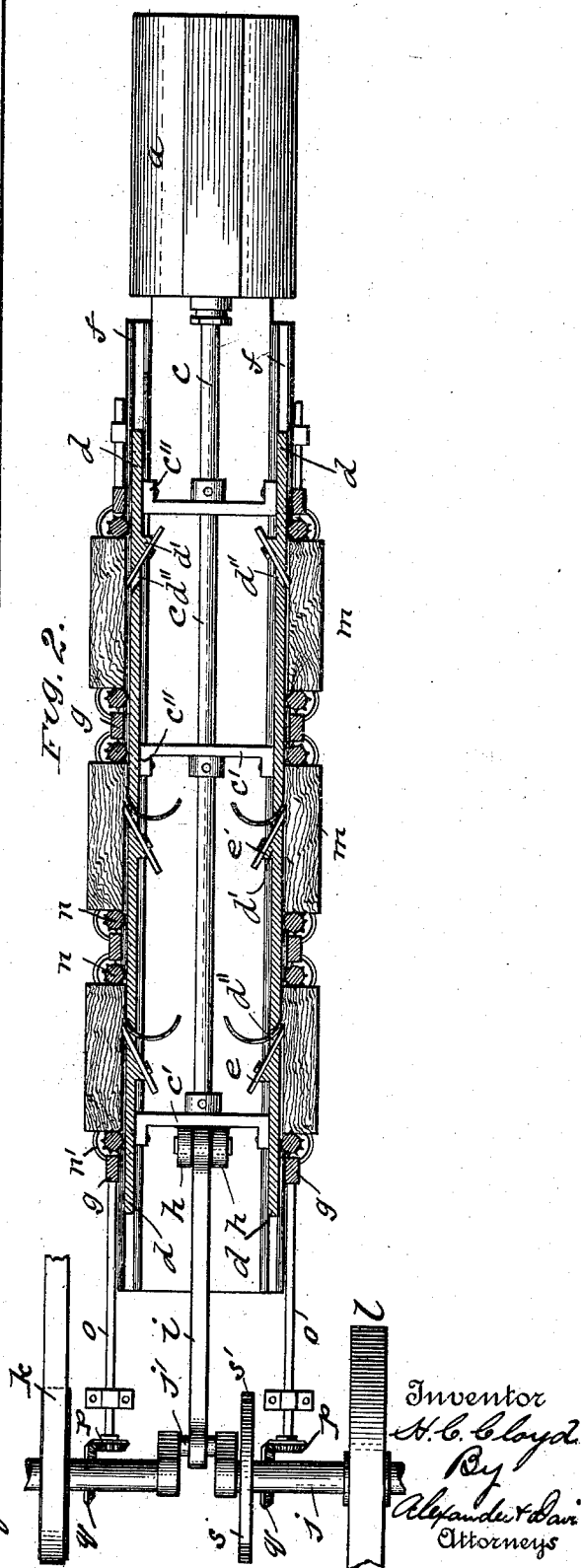
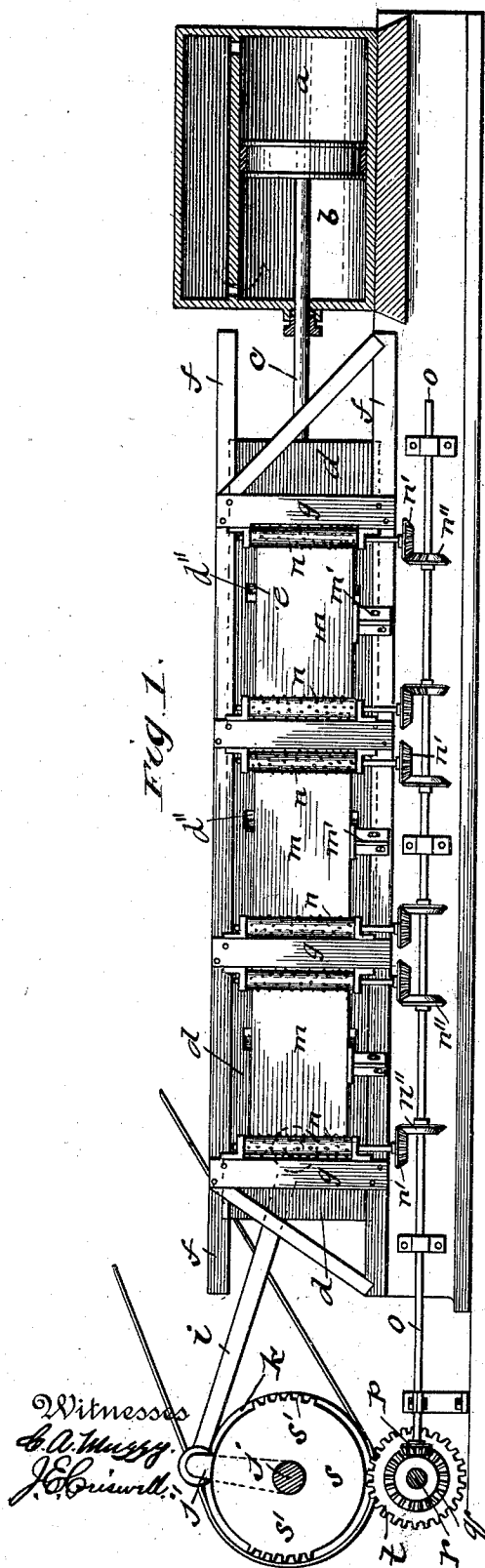


(No Model.)

H. C. CLOYD.
EXCELSIOR MACHINE.

No. 505,752.

Patented Sept. 26, 1893.



UNITED STATES PATENT OFFICE.

HENRY C. CLOYD, OF UNION CITY, INDIANA.

EXCELSIOR-MACHINE.

SPECIFICATION forming part of Letters Patent No. 505,752, dated September 26, 1893.

Application filed March 30, 1893. Serial No. 468,317. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. CLOYD, a citizen of the United States, residing at Union City, in the county of Randolph and State of Indiana, have invented certain new and useful Improvements in Excelsior-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to a new and improved excelsior machine, and it has for its object to provide a machine of simple construction adapted to be placed between the cylinder of a steam engine and its main driving-shaft, the knives of the excelsior machine
15 being carried by the piston rod of the engine, whereby said engine will act directly on the excelsior machine, and at the same time serve to drive other machinery, as will more fully
20 hereinafter appear.

In the drawings:—Figure 1 is a side elevation of my improved machine. Fig. 2 is a horizontal longitudinal section thereof.

In the drawings *a* is the cylinder of a steam
25 engine, *b* the piston working therein and *c* is its piston-rod. This piston rod is longer than is usually the case and on that portion of it which does not enter the cylinder there is rigidly secured a series of cross-heads *c'*.
30 These cross-heads are secured to the piston rod at suitable intervals, and to their flanged vertical edges *c''* are secured the long vertical plates *d d*. These plates connect the cross-heads on each side of the piston rod and
35 have formed on their inner sides the inclined knife-rests *d'*, and openings *d''* are formed in the plates *d*, adjacent to the knife rests, through which openings the knives *e* project; and said plates may be guided by any suitable
40 device. As shown in the drawings they are mounted to slide in upper and lower grooved ways *f*. The lower pair of grooved ways are secured to the bed-plate of the machine, and the upper pair of said ways are
45 supported by the vertical bars *g*, and may be suitably braced if found desirable. The outermost cross-head *c'* has formed at the center of its outer side the outwardly projecting lugs *h, h* between which is pivoted one
50 end of a pitman *i* whose other end is pivoted to the crank *j'* of the main driving shaft *j* of the engine. It will thus be seen that as the

piston reciprocates it operates through its piston rod to reciprocate the plates carrying the knives, and at the same time it may operate
55 other machinery by means of the pitman *i* which is connected to the outermost cross-head *c'* and the main crank shaft *j* carrying the belt wheel *k* and fly-wheel *l*.

As many knives as are found desirable may
60 be mounted on each of the plates; in the drawings I have shown three, two of which operate to cut on the backward stroke of the piston while the other one operates to cut on the forward stroke thereof. The object of
65 this arrangement is that the engine will not have all of the work to do on either stroke, thus equalizing the work, and preventing as far as possible, sudden starts and jerks in its operation, and to this end it is desirable, al-
70 though it is not so shown in the drawings, to have the number of knives which operate at each stroke of the piston to be equal, and the number of knives on each side of the piston-rod which operate on each stroke should also
75 be equal. Blocks of wood *m* are operated on by the knives *e*, and are supported in place by the vertically adjustable brackets *m'* which are mounted on the outer sides of the bed-plate, and these blocks are fed to the knives
80 at the beginning of every stroke by the vertical toothed or roughened rollers *n*. These rollers are mounted in bearings supported on the bars *g*, and on the lower ends of their shafts are secured beveled gears *n'*, which
85 mesh with mutilated beveled gears *n''* carried by long horizontal shafts *o o*. These shafts *o* are mounted in bearings secured to the outer sides of the bed-plate of the machine, and on the outer ends thereof are se-
90 cured beveled gears *p* which mesh with similarly beveled gears *q* mounted on a transverse shaft *r*. This shaft *r* is intermittently re-
95 volved by means of a disk *s* which is mounted on the main driving shaft, and is provided with several gear-teeth *s'* at two points on its periphery diametrically opposite each other, said teeth engaging the gear *t* on shaft *r* to
100 slightly turn said shaft twice during the revolution of said disk. The beveled gears are so mounted on the shafts *o* that the intermittent revolution of the shaft *r* and shafts *o* will operate to feed said blocks inward at the proper instant to be engaged by the knives

at the beginning of every cutting stroke thereof; thus the rollers, which feed the blocks to be operated on by the knives as the piston moves forward, will be turned slightly as the piston finishes its backward stroke and begins its forward stroke, thus feeding said blocks inward the thickness of one excelsior shaving just before the knives come in contact therewith; and as the piston finishes its forward stroke the blocks *m* which are to be operated on as the piston moves backward are fed inward by their feed rollers whose beveled gears are at that moment operated on by the adjacent mutilated gears *n''*. The gearing and feed rollers are always at rest except for the instant they are operated on by the teeth *s'* on disk *s*.

I desire it understood that I do not limit myself to the construction of feeding mechanism shown as other forms of devices may be devised that will answer the purposes equally well.

From the foregoing it will be readily seen that I provide a device of simple and compact construction which is acted on directly by the piston of a steam engine, and is adapted to be located between the cylinder of the engine and its main driving shaft without interfering with the operation of said driving shaft.

Having thus fully described my invention, what I claim is—

1. In an excelsior machine the combination of a steam cylinder, a piston working therein, and its piston-rod, cross-heads rigidly secured to the piston-rod, vertical plates secured to the cross-heads and connecting them on each

side of the piston-rod, suitable guides for these plates, knives carried by these plates on the inner sides thereof, their cutting edges projecting outwardly through openings formed in the plates, some of said knives projecting forwardly and the remainder projecting backwardly for the purpose set forth, adjustable supports carried by the frame of the machine, said supports adapted to support blocks of wood, and means for automatically feeding the blocks of wood to the knives just before said knives begin their cutting stroke, substantially as described.

2. In an excelsior machine the combination of a steam cylinder, a piston working therein, and its piston-rod, a driving-shaft, a pitman connection between said piston-rod and the driving-shaft, cross-heads carried by the piston-rod, vertical plates *d* connecting the cross-heads on each side of the piston-rod, knives carried by said plates, means for supporting blocks of wood against said knives, and means for feeding the wood to the knives, said means consisting of the mutilated gears *s* carried on the drive-shaft and intermittently operating a series of mutilated beveled gears *n'*, *n''* carried by horizontal shafts on each side of the machine, the latter gears operating the feed rollers, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY C. CLOYD.

Witnesses:

JOHN A. WALLACE,
HARRY T. WARREN.