

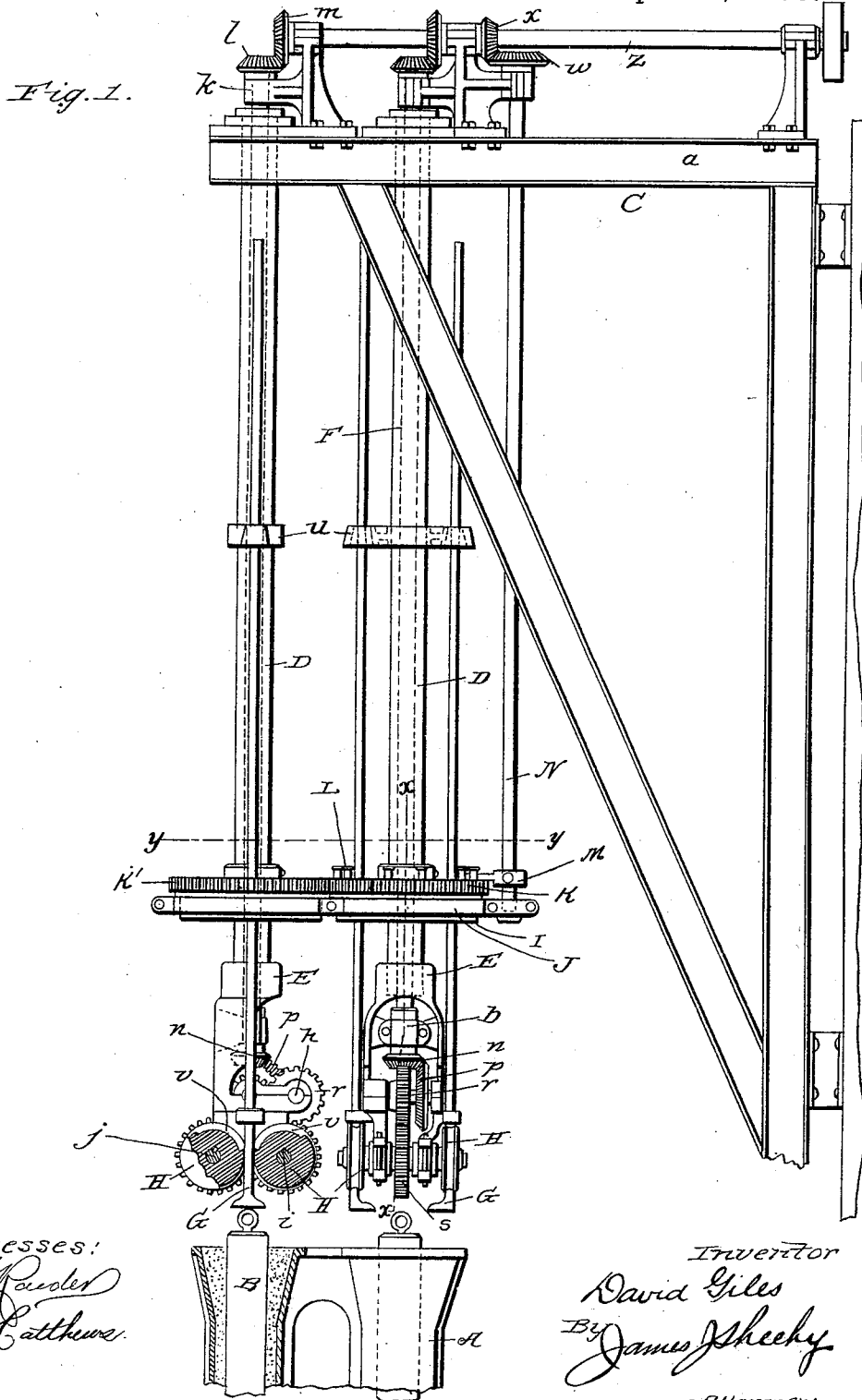
(No Model.)

2 Sheets—Sheet 1.

D. GILES.
APPARATUS FOR MAKING SAND MOLDS.

No. 538,510.

Patented Apr. 30, 1895.



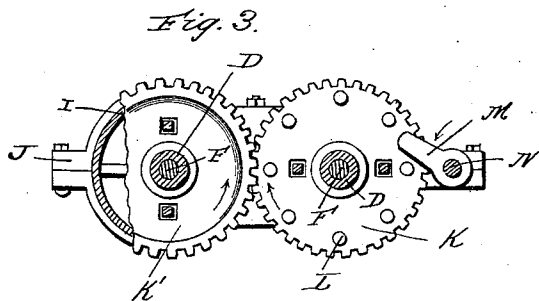
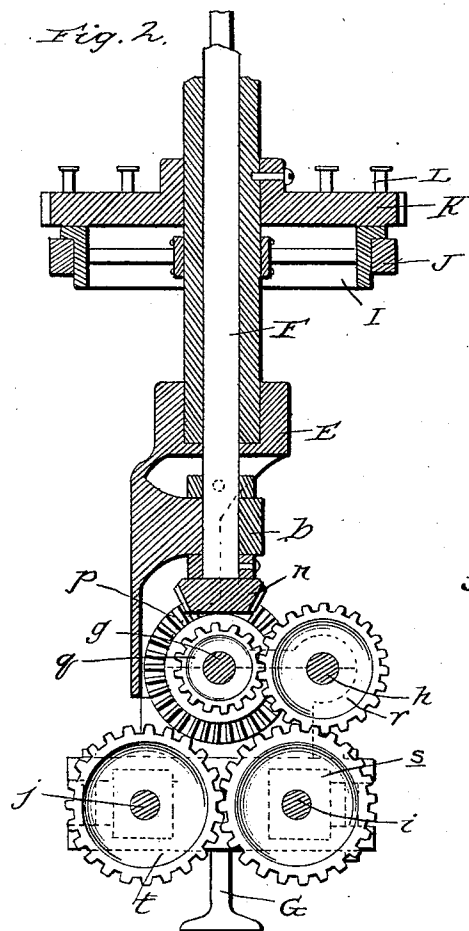
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Witnesses:
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UNITED STATES PATENT OFFICE.

DAVID GILES, OF CHATTANOOGA, TENNESSEE.

APPARATUS FOR MAKING SAND MOLDS.

SPECIFICATION forming part of Letters Patent No. 538,510, dated April 30, 1895.

Application filed February 25, 1895. Serial No. 539,568. (No model.)

To all whom it may concern:

Be it known that I, DAVID GILES, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Apparatus for the Making of Sand Molds; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to apparatus for the making of sand molds for casting pipes, and other cylindrical metallic forms; and it has for its general object to provide a simple, inexpensive, and easily operated apparatus through the medium of which a large number of perfect molds may be made in a short space of time.

Other objects and advantages of the invention will be fully understood from the following description and claims when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a side elevation of my improved apparatus with some of the parts in section to better illustrate the same. Fig. 2 is an enlarged detail section taken in the plane indicated by the line *x x* of Fig. 1, and Fig. 3 is a detail horizontal section taken in the plane indicated by the line *y y* of Fig. 1.

In the said drawings similar letters designate corresponding parts in all of the views, referring to which—

A, indicates an ordinary double flask or pair of flasks to which the sand may be fed by any suitable means.

B, indicates the usual patterns which are shown in their operative positions within the flasks; and C, indicates a swinging crane which carries my improvements. This crane C, is provided with a horizontal arm *a*; and connected with said arm in such a manner that they are adapted to turn, and depending from the same, are two (more or less) sleeves D, which are provided at their lower ends with enlarged portions E, as better shown in Figs. 1 and 2. The said enlarged portions E, may be formed integral with or fixedly connected to the sleeves D, as desired, and they are provided with boxings *b*, for the reception of the vertical shafts F, and are also provided with suitable bearings for the horizontal

shafts *g*, *h*, and for the horizontal shafts *i*, *j*, which latter are arranged in a plane below the shafts *g*, *h*, as illustrated, for a purpose presently described.

The vertical shafts F, above mentioned, are journaled in suitable bearings *k*, upon the crane arm *a*, and are provided at their upper ends with beveled gear wheels *l*, which mesh with beveled gear wheels *m*, on a horizontal shaft Z, whereby it will be seen that when the shaft Z, is rotated by any suitable motive power the shafts F, will be rotated within the sleeves D. At their lower ends the shafts F, are provided with beveled pinions *n*; and rotary motion is transmitted from these pinions to the shafts *i*, *j*, through the medium of the beveled gears *p*, on the shafts *g*, the gears *q*, on said shafts *g*, the gears *r*, on the shafts *h*, which mesh with the gears *q*, the gears *s*, on the shafts *i*, which mesh with the gears *r*, and the gears *t*, on the shafts *j*, which mesh with the gears *s*. Thus the shafts *i*, *j*, will be rotated in opposite directions for a purpose presently described.

G, indicates the vertical, reciprocatory rammers of my improved apparatus which are arranged in guides *u*, on opposite sides of the sleeves D, and enlarged portions E, and are designed to pack the sand in the flasks around the patterns B; and H, indicates friction wheels or rollers which are designed to engage and raise the rammers after the same have fallen. These wheels H, are fixed on the shafts *i*, *j*, on opposite sides of the gear wheels *s*, *t*, and they are preferably provided upon their peripheries with paper or other material calculated to increase the friction between them and the rammers so as to enable them to better engage and raise the said rammers. The rammers are arranged between wheels on the shafts *i*, and wheels on the shafts *j*, as shown, and the said wheels have a portion or segment of their peripheries cut away or recessed as indicated by *v*, and have the said cut-away portions so arranged that they will come together at intervals in the rotation of the wheels so as to release the rammers and permit them to fall and perform their function of packing the sand in the flasks around the patterns B.

By reason of the construction thus far described it will be seen that when the apparatus is in operation, and the wheels H, are ro-

tated, the rammers will be raised and permitted to fall at frequent intervals so as to thoroughly pack the sand about the patterns in the flasks in a short space of time.

5 I, indicates collars which are fixed upon the sleeves D, and are arranged within and upon straps J, which are designed for the connection of suitable stays (not illustrated) for holding the apparatus rigid; and K, K', indicate gear wheels which are fixed upon the
10 sleeves D, above the collars I, and mesh with each other as shown. The gear wheel K, is provided on its upper side with a series of equi-distant posts or pins L, arranged in a
15 circle, and these posts or pins are designed and adapted to be engaged by a tappet arm M, on a vertical shaft N, which has a beveled gear w, at its upper end meshing with a beveled gear x, on the shaft Z, whereby it will be
20 seen that when the apparatus is in operation, and the said shaft Z, is rotated, the sleeves D, will be rotated in opposite directions so as to move the rammers in circular paths and enable the same to thoroughly pack the sand at
25 all points around the patterns in the flask.

In the practice of my invention, the patterns are placed in the flasks in the ordinary or any suitable manner and the sand is fed to the flasks by any suitable means. After the
30 patterns are placed in the flasks and the flasks are charged with sand, as stated, the crane C, is moved so as to carry the rammers to a position above the flask as shown in Fig. 1. The machinery is then set in motion, when the
35 rammers will be raised and permitted to fall at frequent intervals and the sleeves D, will be slowly turned so as to enable the rammers to thoroughly pack the sand all around the patterns. In this way it will be observed that
40 a perfect sand mold may be quickly and easily made which is a desideratum, as is obvious. After the making of the mold is completed, the crane may be moved so as to carry the rammers from above the flasks when the patterns
45 may be readily removed in the usual manner.

The mounting of my improvements upon the crane is desirable because it permits of the rammers being easily moved toward and from their position above the flasks, but I do
50 not desire to be understood as confining myself to mounting my improvements on a crane as they may be mounted and operated on any suitable support. I also do not desire to be understood as confining myself to using two
55 or more sets of rammers in conjunction, although such use is preferable, as only one set of rammers and their appurtenances may be used if desired.

It will be seen from the foregoing that my
60 improved apparatus is very simple, inexpensive and easily operated, and it will also be seen that the apparatus may be easily operated by one or two persons which is an important advantage.

65 Having described my invention, what I claim is—

1. In an apparatus for forming molds for

pipes, the combination of a suitable support, a rotary sleeve connected to the support and having an enlarged portion E, at its lower end, 70 shafts i, j, journaled in said enlarged portion E, friction wheels fixed on the shafts i, j, and having a segment or portion of their peripheries removed, a reciprocatory rammer arranged in guides on the sleeve, a rotary shaft 75 arranged in and extending lengthwise of the sleeve, gearing connecting said shaft and the shafts on which the friction wheels are fixed, a drive shaft connected with the rotary shaft in the sleeve, and means for rotating said 80 sleeve, substantially as and for the purpose set forth.

2. In an apparatus for forming molds for pipes, the combination of a suitable support, rotary sleeves connected to the support, and 85 having enlarged portions E, at their lower ends, rammers arranged in guides on the sleeves, friction wheels fixed on shafts journaled in the enlarged portions E, and adapted to raise and automatically release the ram- 90 mers, rotary shafts arranged in the sleeves and extending lengthwise thereof and connected by gearing with the friction wheels, a drive shaft connected with the shafts in the sleeves, gear wheels fixed on the sleeves and 95 meshing with each other, one of said wheels being provided with a series of posts or pins, and a shaft connected by gearing with the drive shaft and having a tappet arm for engaging the posts or pins of the wheel on the 100 sleeve, substantially as and for the purpose set forth.

3. In an apparatus for forming molds for pipes, the combination of a suitable support, 105 a rotary sleeve connected to the support, reciprocatory rammers arranged in guides on the sleeve, friction wheels engaging and adapted to raise and automatically release the rammers, a rotary shaft arranged in the sleeve and connected by gearing with the friction 110 wheels, a drive shaft, and mechanism connected with the drive shaft for rotating the sleeve and the shaft within the same, substantially as specified.

4. In an apparatus for forming molds for 115 pipes, the combination of a suitable support, rotary sleeves connected to the support, rammers arranged in guides on the sleeves, friction wheels engaging and adapted to raise and automatically release the rammers, rotary 120 shafts arranged in the sleeves and connected by gearing with the friction wheels, a drive shaft connected with the shafts in the sleeves, gear wheels fixed on the sleeves and meshing with each other, and mechanism intermediate 125 of the drive shaft and one of the sleeves for rotating said sleeve, substantially as specified.

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

DAVID GILES.

Witnesses:

M. LLEWELLYN,
E. B. THOMASSON.