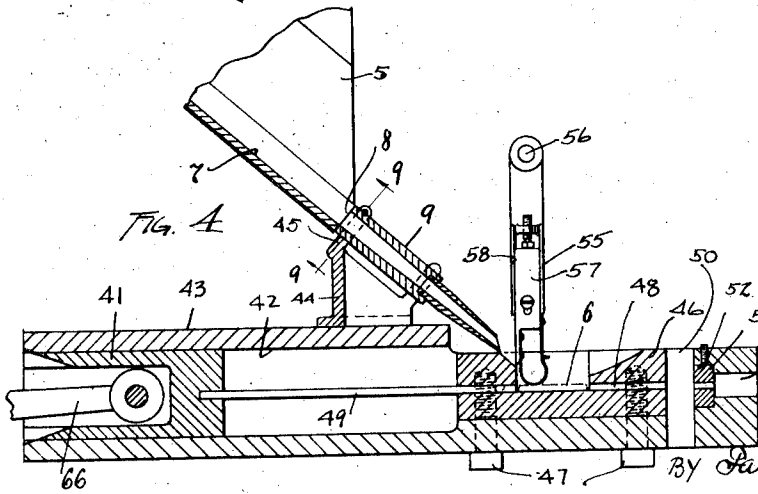
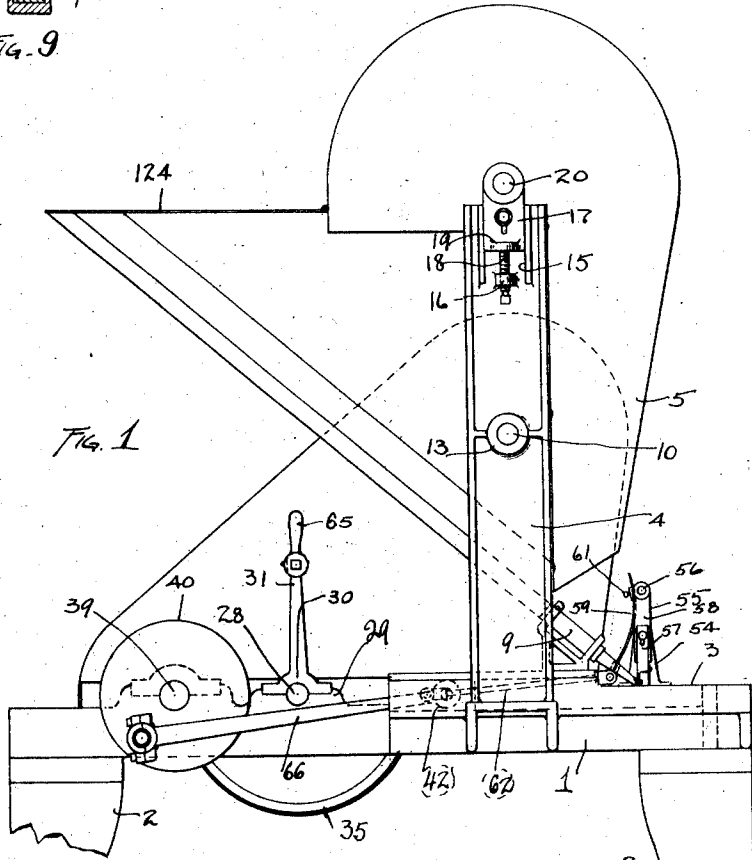
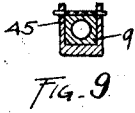


T. W. FOOTE.
 MACHINE FOR SIZING DOWEL PINS AND THE LIKE.
 APPLICATION FILED MAY 2, 1919.

1,401,331.

Patented Dec. 27, 1921.

3 SHEETS—SHEET 1.



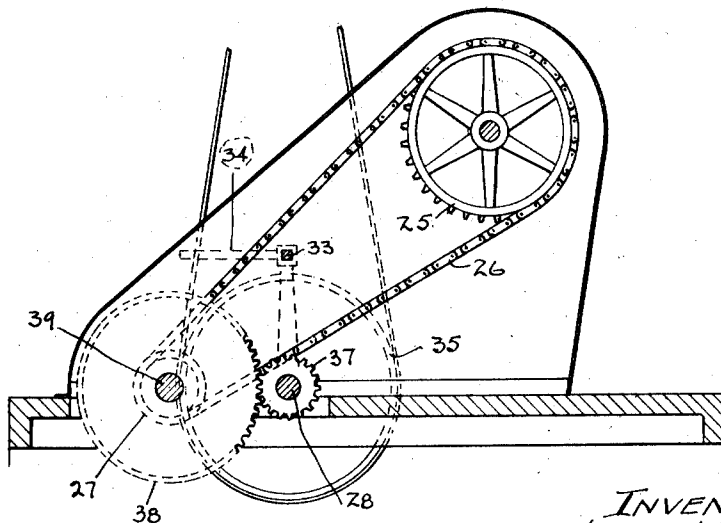
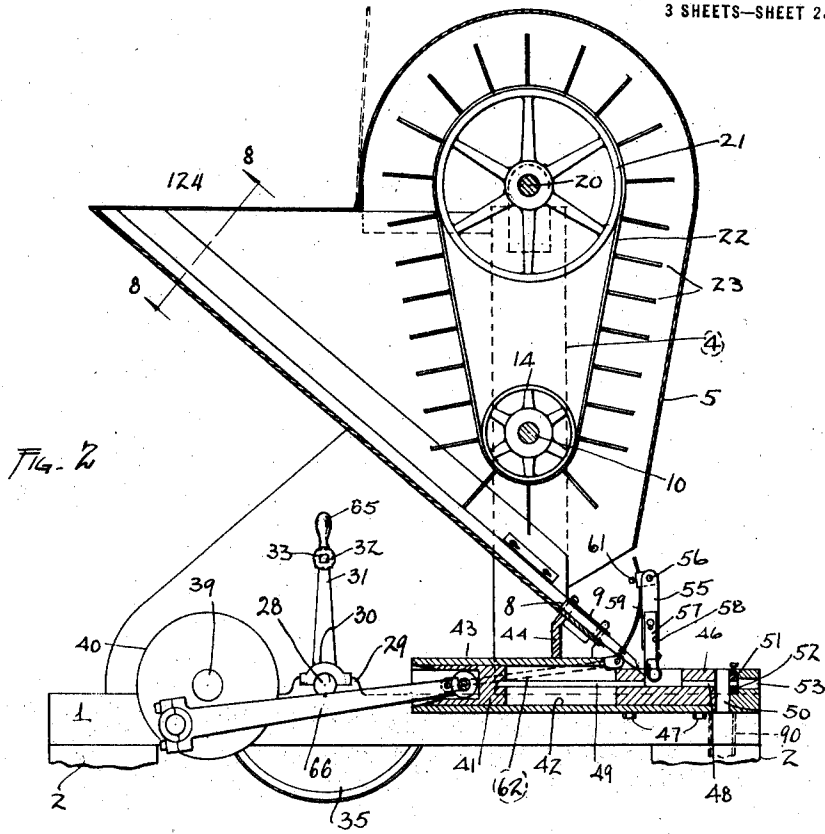
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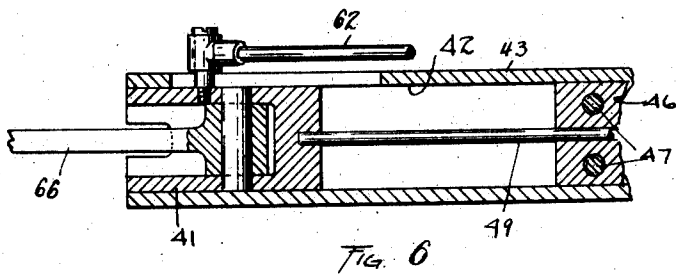
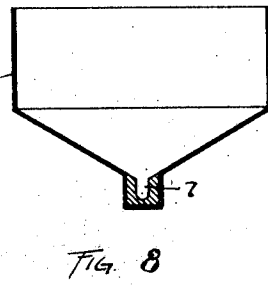
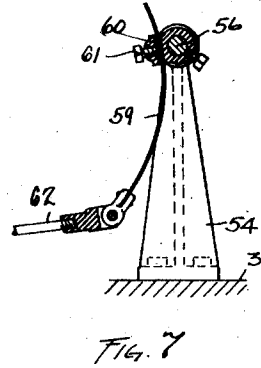
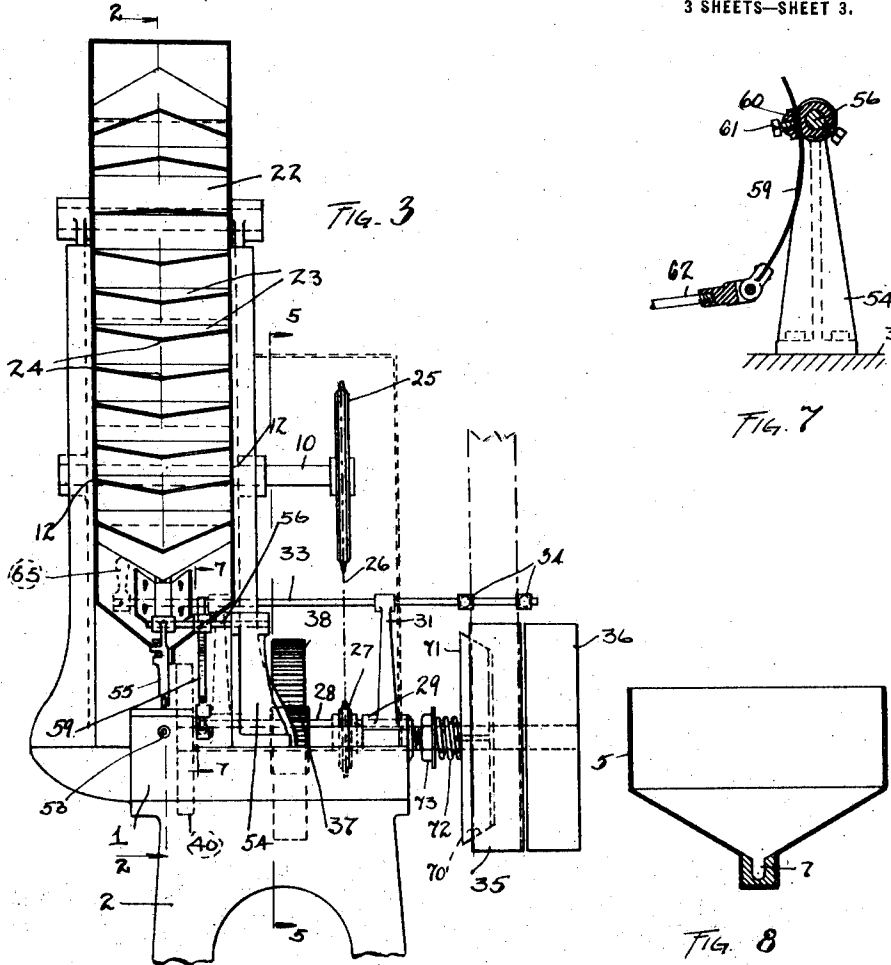
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

THOMAS W. FOOTE, OF EAST CLEVELAND, OHIO.

MACHINE FOR SIZING DOWEL-PINS AND THE LIKE.

1,401,331.

Specification of Letters Patent. Patented Dec. 27, 1921.

Application filed May 2, 1919. Serial No. 294,219.

To all whom it may concern:

Be it known that I, THOMAS W. FOOTE, a citizen of the United States, and a resident of East Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Machines for Sizing Dowel-Pins and the like, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to machines for automatically sizing dowel pins. The machine relates more particularly to means for automatically handling and feeding the pins one by one to the sizing mechanism and then forcing them through a suitable die. Provision is also made for preventing more than one pin at a time reaching the sizing and operating mechanism. Other features of the invention are the arrangement of the parts whereby dies may be readily changed and the feeding mechanism changed to suit the various sizes of pins. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Figure 1 is a side elevation of my improved machine; Fig. 2 is a vertical section taken on the line 2—2, Fig. 3; Fig. 3 is an end elevation with a hopper in section; Fig. 4 is an enlarged section of the feeding and die-operating mechanism; Fig. 5 is a section on the line 5—5, Fig. 3, showing the arrangement of the driving mechanism; Fig. 6 is a section through the plunger; Fig. 7 is a section on the line 7—7, Fig. 3; Fig. 8 is a section on the line 8—8, Fig. 2; and Fig. 9 is a section on the line 9—9, Fig. 4.

Referring to the general construction of the machine, it will be seen that the device has a suitable base 1 provided with the usual legs 2, the top of the base or table 3 of the machine carrying all the operating mechanism. This base is provided with two uprights 4 between which a hopper or container 5 for rough dowel pins 6 is mounted.

The hopper is roughly triangular in shape, as shown in Fig. 2, and is V-shaped along the inclined side, the bottom of this side being provided with a groove 7 for the reception of the pins to be fed, as best shown in Fig. 8. This groove extends the length of the inclined side and furnishes the outlet opening 8 which is in alinement with a delivery spout 9, which will be described in detail hereinafter.

A shaft 10 is mounted in suitable bearings 13 in the uprights 4 and extends through suitable apertures 12 in the sides of the hopper and on this shaft within the hopper is mounted a pulley wheel 14. At the upper ends of the uprights, guideways 15 are provided having threaded bosses 16, bearing plates 17 being mounted between the guideways and being adjustably held therein by means of screws 18 which extend through the bosses and engage with lugs 19 on the bearing plates. A second shaft 20 is mounted in these bearing plates and this shaft is provided with a second pulley wheel 21. A belt 22 surrounds the two pulleys and this belt has a series of blades or fans 23 formed with triangular shaped ends 24 which are adapted to move around in the hopper and throw the pins 6 so that they will fall into alinement in the groove 7 leading to the delivery spout 9. The hopper casing fully incloses this feeding mechanism and a hinged door 124 is provided at the top of the hopper for the admission of the dowel pins. The lower shaft 10 extends beyond one of the uprights and is provided at its outer end with a sprocket 25 which is driven by a chain 26 from a small sprocket 27 mounted on a shaft 39 at the rear of the machine.

In the base of the machine a driving shaft 28 is mounted in suitable bearings 29, the upper halves 30 of these bearings being formed with vertically extending arms 31 apertured at their upper ends. Through these apertures 32, a shaft 33 is slidably mounted which carries at its outer end a belt shifter 34 and is provided at its other end with a handle 65. Beyond the side of the machine, the drive shaft 28 is provided with two pulley wheels 35 and 36, the outer wheel 36 being a loose pulley, in order to disconnect the machine from the power shaft by means of the shifter 34 heretofore described. The pulley 35 is also loosely mounted on the shaft 28 and is provided with a conical recess 70 normally in en-

gagement with a cone clutch 71 which is keyed to the shaft. Adjustable pressure is provided for the clutch 71 by means of a spring 72 held between a nut 73, having threaded engagement with the shaft 28 and the clutch 71. By this means provision is made, so that if a dowel pin should jam, it will be possible for the pulley 35 to slip and thereby avoid breakage of any part of the machine. Mounted on the driving shaft 28 is a pinion 37 which is in engagement with a larger gear 38 carried on the shaft 39 on which is also mounted the sprocket 27 for operating the feed mechanism. This second shaft 39 also carries an eccentric 40 from which the plunger 41 is operated.

The base of the machine is recessed or formed with a square trough 42 in which the plunger 41 and die mechanism are located. The plunger is mounted within this recess and is operated by a connecting rod 66 from the eccentric 40. A cover plate 43 is mounted over the plunger so that the plunger and connecting rod are entirely inclosed. On the top of this cover plate, a casting 44 is mounted which carries the delivery or outlet spout 9, the spout being removably mounted in an arm 45 carried on the casting 44.

Within the recess or trough 42 in the base, in alinement with the plunger and just in front of the outlet spout, a recessed block 46 is mounted and is held in place by bolts 47 which pass through the base and have threaded connection with the block. This block 46 is provided with an aperture 48 extending longitudinally of the same and of the size adapted to allow the dowel pins to slide easily therethrough. Mounted in the plunger is a push rod 49 which extends into this aperture 48 in the block and is adapted to force the dowel pins through the block upon operation of the plunger. In front of the block, there is a vertical aperture 50 in the base and just beyond this aperture the removable die 51 is mounted in a suitable recess 52 in the base of the machine, the base being apertured as at 53 beyond the die to allow the pins to drop out into any suitable container.

The means for feeding the dowel pins singly into the recessed block consist of a rigid member 54 attached to the base and a swinging arm 55 mounted on a shaft 56 carried in the top of such member 54, this arm having an adjustable finger 57 mounted in a guide 58 thereon, which finger extends into the recess in the block and is adapted to be adjusted, so that its lower end just swings clear of a dowel pin when the same lies flat in the groove at the bottom of the recess. The operation of the arm is obtained by means of a strip 59 of spring metal adjustably mounted in a slot 60 in a sleeve 67 which is rigidly fastened on the shaft 56

and being held in place in such slot by means of a set screw 61 or like device. At its lower end, the arm is pivotally connected to a link 62 which is connected at its other end to the plunger.

When the operating mechanism is in the position shown in Fig. 4 with the plunger retracted and a dowel pin lying in the recess in the block just in front of the push rod, the swinging arm prevents another pin from being delivered from the spout of the machine. As the plunger moves forwardly and the dowel pin is forced through the aperture and die, the arm is also swung away from the spout, allowing another dowel pin to rest upon the push rod and take an inclined position. When the forward stroke has been finished and the plunger is again retracted, the arm is moved back in front of the spout and at the same time it contacts with the dowel pin and forces it flat into the groove through which the push rod works, again closing the spout against delivery of another pin. In this manner, the pins are fed one at a time to the recess in the block and the plunger then forces them through the aperture in the block and through the die from whence they pass out into a suitable container. The vertical aperture in front of the die is, of course, of such a diameter that the pins easily span the same and there is no tendency for the pins to drop out through this aperture. The shavings or cuttings from the die, however, drop through an aperture and prevent the clogging of the machine. It may also be desirable to connect a suction fan to this aperture to carry away the shavings. A suitable conduit 90, shown in dotted outline in Fig. 2, would then be connected below the aperture.

It will be noticed that the recessed block and the die, as well as the delivery spout, are easily removable and will be changed for different sizes of pins, the swinging arm being adjusted for each size so that it does not prevent the movement of the pin and the push rod through the block.

The use of the revolving belt having the blades thereon, which are preferably made of leather or some other fairly stiff material, has been found a very satisfactory way in which to line up a series of dowel pins in the groove along the inclined bottom of the hopper. From this groove, the pins feed by gravity through the outlet spout into the recessed block through which the push rod works and are forced through the aperture in this block and the die where they are sized. The means for preventing the entry of more than one pin at a time to the recess on the block is simple and satisfactory in its operation and the whole device makes a very satisfactory machine for sizing dowel pins rapidly. As best shown in Fig. 3, the operating mechanism, including the driving

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gears and the sprockets for driving the hopper feed are inclosed in a suitable casing which is, of course, readily removable.

5 Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be
10 employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In mechanism of the character described, the combination of a base provided
15 with alined slots and apertures, a plunger and push rod mounted in one of such slots, a die mounted in another of such slots, a recessed receiving block mounted between said plunger and die and adapted to receive single
20 dowel pins in alinement with said plunger and die, means for feeding single dowel pins into such recess, said means comprising a hopper for the pins having a delivery spout adjacent such recess, a swinging arm mounted
25 on said base over such recess and extending into the same and means for reciprocating said plunger to force a pin through said die and for swinging said arm to allow sin-

gle pins to drop into such recess ahead of said push rod. 30

2. In mechanism of the character described, the combination of a base provided with alined slots and apertures, a plunger and push rod mounted in one of such slots, a die mounted in another of such slots, a
35 recessed receiving block mounted between said plunger and die and adapted to receive single dowel pins in alinement with said plunger and die, means for feeding single dowel pins into such recess, said means comprising
40 a hopper for the pins having a delivery spout adjacent such recess, a swinging arm mounted over said base and adjacent said delivery spout, said arm in its normal position being adapted to block said spout and to
45 extend into such recess, and means to swing said arm to allow a single pin to enter such recess ahead of said push rod, return movement of said arm acting to block said spout and to force the pin into such recess ahead
50 of said plunger, and other means to actuate said plunger and push rod to force the pin through said die.

Signed by me, this 30th day of April, 1919.

THOMAS W. FOOTE.