Nov. 17, 1925. 1,562,238

J. C. MAGEE

WIRE DRAWING MACHINE

Filed Dec. 20, 1921 3 Sheets-Sheet 1

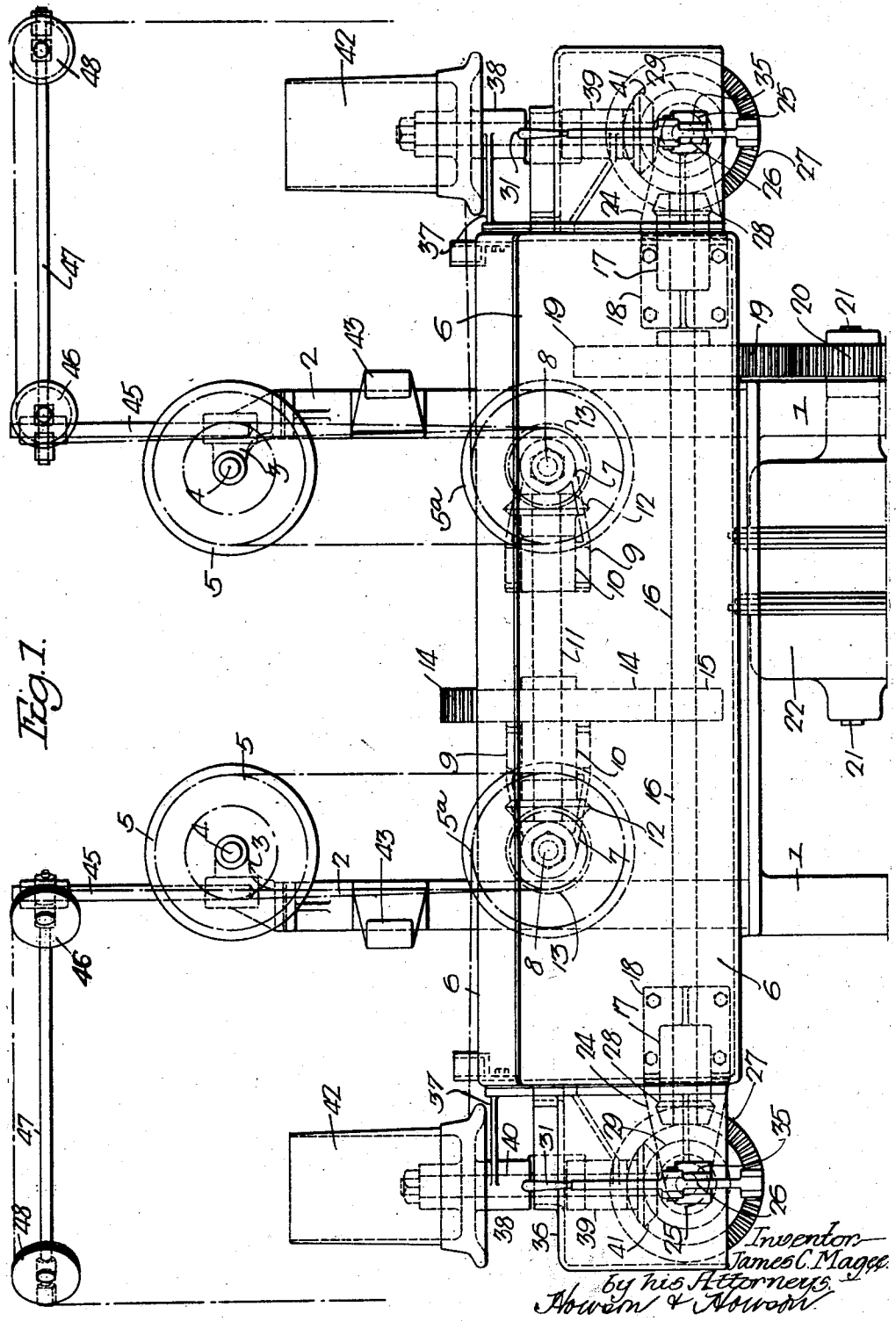


Fig. 1.

Inventor
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Filed Dec. 20, 1921 3 Sheets-Sheet 2

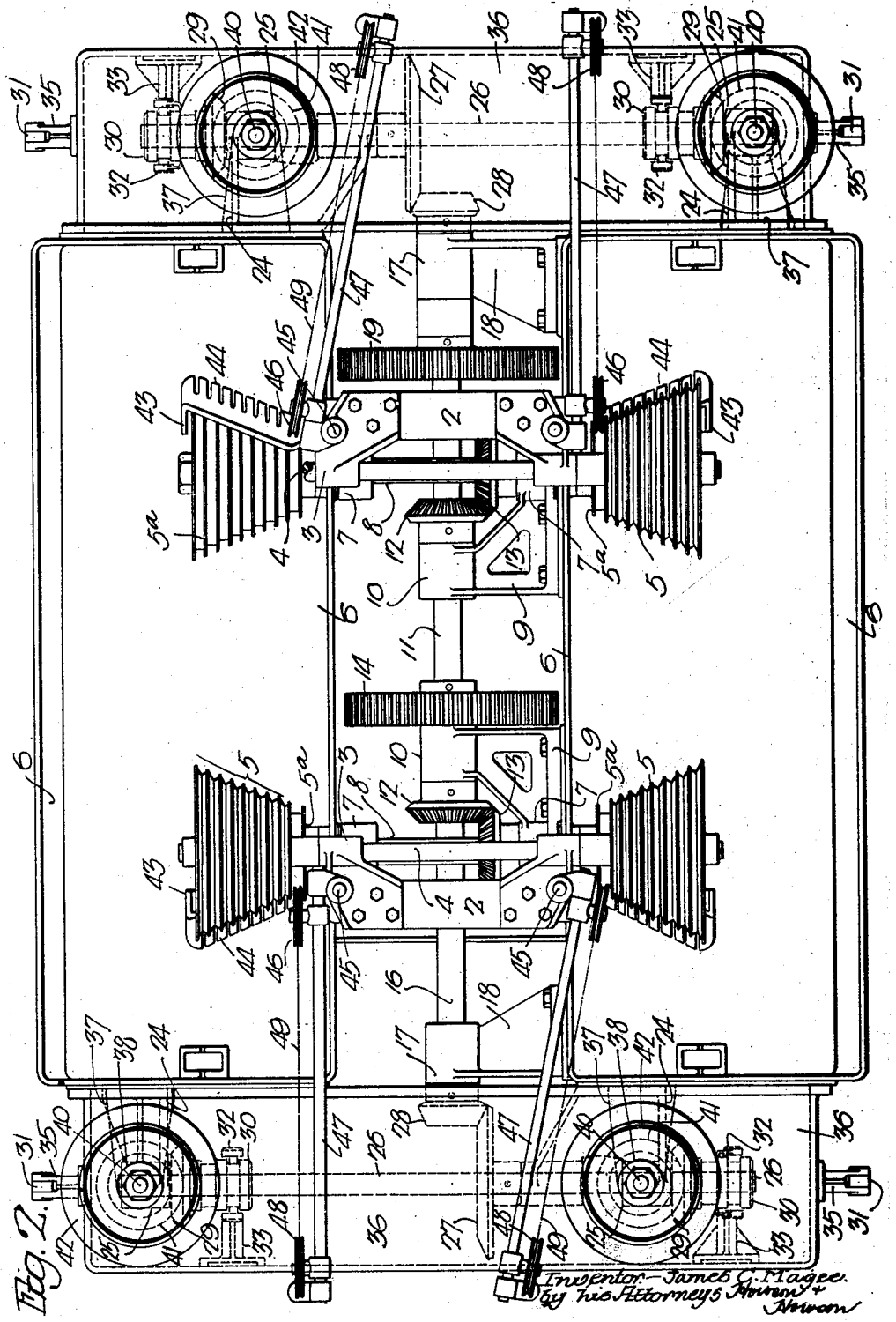


Fig. 2.

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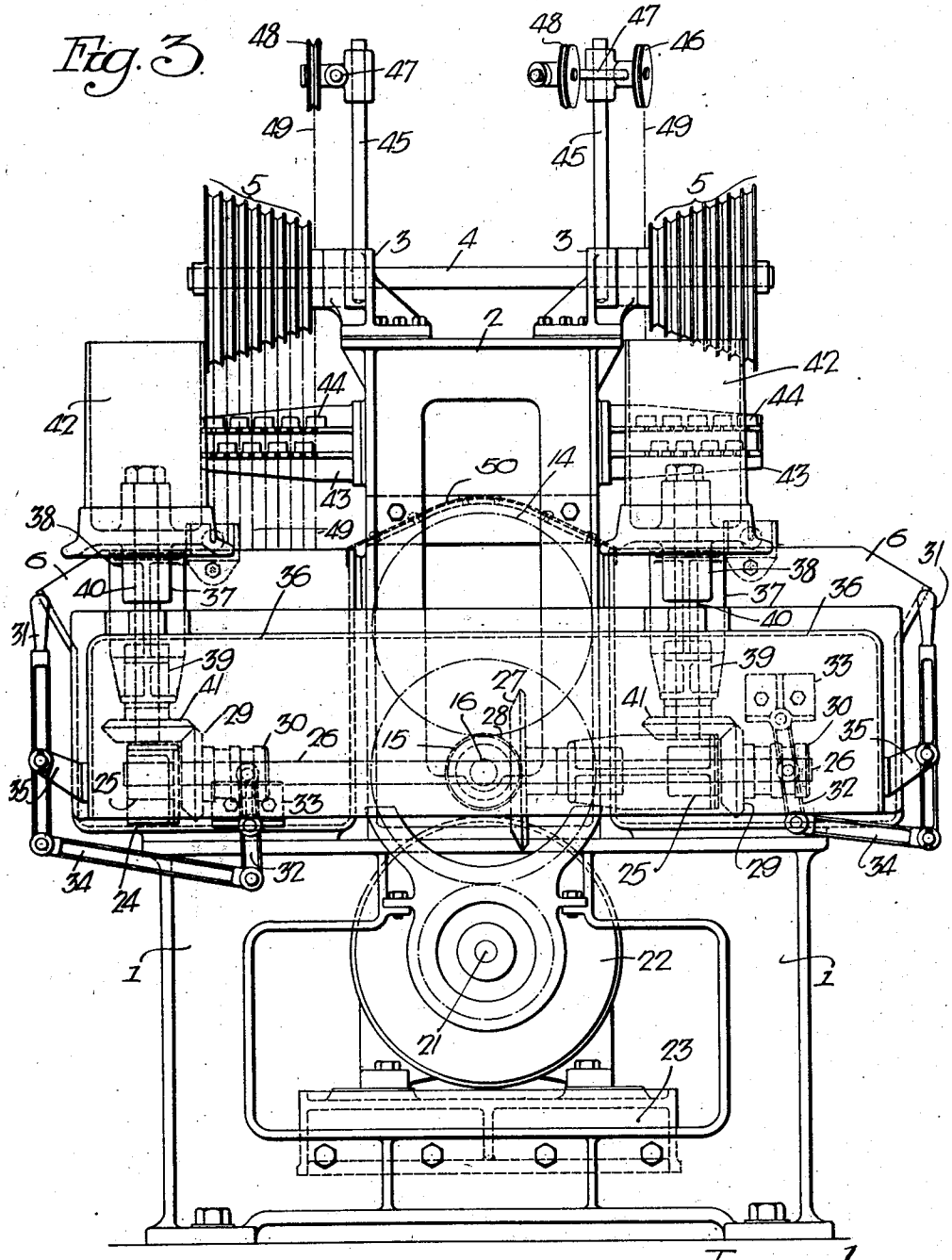
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Fig. 3.



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Patented Nov. 17, 1925. 1,562,238

UNITED STATES PATENT OFFICE.

JAMES C. MAGEE, OF HASTINGS-ON-THE-HUDSON, NEW YORK, ASSIGNOR TO AMERICAN INSULATING MACHINERY COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

WIRE-DRAWING MACHINE.

Application filed December 20, 1921. Serial No. 523,677.

To all whom it may concern:

Be it known that I, JAMES C. MAGEE, a citizen of the United States, residing in Hastings-on-the-Hudson, New York, have invented a Wire-Drawing Machine, of which the following is a specification.

My invention relates to machines for drawing wire, and the principal object of the invention is to provide a self-contained machine having certain novel and improving features in construction and in disposition of the parts hereinafter fully set forth.

The invention will be more readily understood by reference to the attached drawings, in which:

Figure 1, is a side elevation of the essential portions of a machine made in accordance with my invention;

Fig. 2, is a plan view of the machine, and Fig. 3 is an end elevation of the machine.

In the drawings, 1 indicates a base frame upon which is mounted, one at each end, an upright frame element 2. Each of the elements 2 carries at the top thereof a pair of brackets 3, 3, having formed therein bearings in which are established a shaft 4 bearing at each end a set, 5, 5, of idler sheaves. Also mounted upon the base frame 1, one at each side of the frame elements 2, is a pair of tanks 6, 6, said tanks being secured in suitable manner to the respective sides of the said frame elements.

Oppositely disposed on the adjacent sides of the tanks 6, 6, and suitably secured to said tanks are two pairs of bearings 7, 7, underlying respectively the pairs of bearings in which are mounted the shafts 4, 4; and mounted in each of the respective pairs of bearings 7, 7, is a shaft 8, which shafts parallel the aforementioned shafts 4, 4, which they respectively underlie. Mounted upon each end of each of the shafts 8, 8, is a set of drawing sheaves 5^a which correspond in number and disposition with the sheaves of the sets 5 mounted on the shafts 4.

As best shown in Fig. 2, one of each pair of the bearings 7 in which are mounted the shafts 8 constitutes an integral part of a bracket 9 suitably secured to the side of one of the tanks 6, and each of these brackets also carries, disposed at right angles to the bearings 7, a second bearing 10 which constitutes a supporting means for a shaft 11 extending parallel to the sides of the tanks 6 and intermediate said tanks and at right angles to the shafts 4 and 8.

The shaft 11 lies substantially in the same horizontal plane as the shafts 8, 8, and carries at each end a bevel pinion 12 which meshes with a bevel pinion 13 carried respectively by the shafts 8, 8. Also carried by the shaft 11 is a spur gear 14 which meshes with a pinion 15 upon a main shaft 16 extending parallel to and directly beneath the shaft 11, and mounted in bearings 17, 17, on brackets 18, 18, secured to a side of one of the tanks 6, as best shown in Fig. 2.

The main shaft 16 has mounted thereon a spur gear 19 which meshes with a pinion 20 upon the armature shaft 21 of an electric motor 22, which motor, as best shown in Fig. 3, is mounted upon a beam 23 secured to the opposite sides of the base frame 1 and extending therebetween.

Secured to the opposite end faces of each of the tanks 6, 6, is a bracket 24 having at the outer end thereof a horizontal bearing 25, the bearings 25 at the corresponding ends of the tanks being in alignment and constituting means for supporting horizontal shafts 26, 26, one at each end of the machine, said shafts lying substantially in the same horizontal plane as the main shaft 16. Each of the shafts 26 carries a bevel gear 27 which meshes with a bevel pinion 28 carried one at each end of the main shaft 16. Each of the shafts 26 carries also a pair of bevel pinions 29, 29, which pinions are disposed one near each end of the said shafts and being loose thereon so as to be capable of free rotation relative to the shafts. Each of the bevel pinions 29 has associated therewith a friction clutch 30 by means of which the said pinions may be made fast to the shaft upon which it is mounted, or may be left free to rotate with respect thereto, as desired.

As most clearly illustrated in Fig. 3, each of the clutches 30 is controlled by means of a hand lever 31, which is connected with the movable element of the clutch by means of a lever 32, which latter is pivotally secured to a fulcrum bracket 33 and a connecting rod 34, the lever 31 being pivotally mounted upon a bracket 35, and the lever 32 being so

connected to the clutch elements which are carried by the shafts 26, 26, that oscillation of the hand levers 31 releases or throws in the said clutch elements as desired.

The fulcrum bracket 33 and the bracket 35 are secured to end casings 36, 36, which are secured, one at each end of the machine, to the ends of the tanks 6, 6, said end casings constituting boxes to completely protect the shafts 26 and the gear elements associated therewith.

Secured to each end of each of the tanks 6 is a bracket 37, said brackets each having a pair of vertically disposed and aligned bearings 38 and 39, in which pairs of bearings are mounted vertical shafts 40 having at the lower end thereof a bevel pinion 41 meshing with the respective pinions 29 upon the shafts 26. As best shown in Fig. 1, the brackets 37 are disposed with the bearing 38 above the top of the casing 36 and the bearing 39 in the interior thereof, and the said casings are recessed at the top to permit the passage therethrough of the bracket 37 and the shaft 40 carried thereby. On the top of each of the shafts 40 is mounted a block 42 in the form of a drum, said blocks being adapted to rotate with the shafts and functioning in a manner hereinafter described.

Extending outwardly from each side of the respective frame elements 2 is a bracket 43 so disposed as to lie intermediate the respective vertically aligned pairs of sets of idler and drawing sheaves 5 and 5ª, said brackets constituting holders for sets of dies 44, the action of which will be described hereinafter.

Extending upwardly from the tops of the bearing brackets 3, 3, is, in each case, an upright 45, each of which carries at the top a guide sheave 46 and a lateral arm 47, at the ends of which is a second guide sheave 48, said guide sheaves constituting means for conducting a wire from a suitable source of supply to the drawing mechanism. In Fig. 3, the wires are indicated in broken lines and by the reference numeral 49.

A suitable sheet metal cover plate 50 may be employed to extend between the adjacent sides of the tanks 6, 6, as shown in Fig. 3, said cover plate constituting means for enclosing and protecting the shafts 11 and 16 and the associated gears.

The operation of the machine is as follows:

Each of the vertically aligned pairs of sheaves 5, 5ª, the drawing dies disposed therebetween and the adjacent block 42 constitutes an entirely distinct and independent drawing mechanism, each, however, receiving its actuation from the common motive source represented in the present instance by the electric motor 22, through the main shaft 16, the shaft 11, and the associated gears and pinions. Each of the blocks while being operated from the same source is capable by reason of the clutches 30 of independent detachment from the operating source. The wires 49 are led to the respective mechanisms from separate sources of supply by way of the respective sets of guide sheaves 46 and 48, the wires passing from the sheave 46 to the drawing sheaves, and thence to the idler sheaves, and back and forth between the sheaves, and through the respective dies in well known manner, passing finally to the blocks 42 upon which the drawn wire is wound.

It will be noted that the machine is an extremely compact one and entirely self-contained. Further each complete drawing mechanism has its own controlling clutch permitting the operation of one or all as desired, or any intermediate number. It will further be noted that the tanks 6, 6, are entirely separated, and that each tank is adapted to contain two sets of the drawing sheaves, this arrangement having the advantage of extreme compactness and simplicity. It will further be noted that by disposition of the parts as described and by use of the end casings 36, the entire running mechanism of the machine is guarded and protected from dirt and other foreign substances.

I claim:

1. In a wire-drawing machine, the combination with a horizontal main drive shaft, of a source of motive power connected with said shaft, a second shaft disposed above the main shaft and operatively connected thereto, a tank at each side of said main shaft, a plurality of sets of drawing sheaves mounted in each of said tanks and operatively connected with said second shaft, and a block for each of said sets of drawing sheaves operatively connected with the said main shaft.

2. In a wire-drawing machine, the combination with a motor, of a horizontal main drive shaft operatively connected therewith, a second shaft operatively connected with the main shaft and disposed above and parallel to the main shaft, a pair of tanks disposed one on each side of said main shaft, a pair of shafts extending at right angles to the main shaft having their opposite ends disposed respectively in the said tanks, a set of drawing sheaves at each end of each of the said latter shafts, means operatively connecting the said latter shafts with the said second shaft, a block adjacent each of the sets of drawing sheaves, and means operatively connecting said blocks with the main shaft.

3. In a wire-drawing machine, the combination with a motor, of a horizontal main shaft operatively connected therewith, a second shaft disposed above and parallel to

the main shaft and operatively connected therewith, a pair of shafts extending laterally of the main shaft and in the same horizontal plane with the second shaft, means operatively connecting the second shaft with the said lateral shafts, a set of drawing sheaves at each end of each of said lateral shafts, a pair of shafts extending laterally of the main shaft and in the same horizontal plane therewith, means operatively connecting the said last-named lateral shafts with the main shaft, a vertical shaft operatively connected with each end of each of the said last-named lateral shafts, a block upon each of the vertical shafts, and means operatively connecting the said vertical shafts with the end of the said lateral shafts to which they are adjacent, said connecting means including clutch mechanism for detaching and uniting said shafts.

4. In a wire-drawing machine, the combination with a horizontally disposed main shaft, of a pair of shafts disposed laterally of and substantially in the same horizontal plane with and opposite the respective ends of said main shaft, means operatively connecting said end shafts with the main shaft, a shaft established above and parallel to the main shaft and connected therewith, a shaft extending laterally of and opposite each end of the said upper shaft and substantially in the same plane therewith, means operatively connecting the said latter three shafts, and wire-drawing mechanism associated with said shafts, substantially as described.

JAS. C. MAGEE.